The Builder.

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Antique and Modern.

SOME few years ago a remarkable group of sculpture was exhibited at the Paris Salon under the title "Antique et Moderne"; an illustration of it was published in the *Builder* of July 15, 1899. The sculptor represented the spirit of the antique by the seated figure of a noble-looking man of middle age, draped in classic fashion, and gazing calmly upward as if in contemplation of the Heavens. The modern spirit was represented by a nude figure of a young woman poring over a book placed on her knee, with one hand pressed to her forehead as if in perplexity. The fancy of representing the antique figure fully draped and the modern one nude, which was rather the contrary of what one might have expected, was probably due more to a desire for sculpturesque contrast than to any symbolical intention. The group was evidently intended to indicate not merely the contrast between ancient art and modern art, but that between the whole spirit of the antique mind and culture as compared with modern. The ancient spirit contemplated and admired: the modern spirit pores and dissects.

Though this contrast applies to the whole of life, ancient and modern, it is perhaps more remarkable in art than in any other class of production; and less understood. Greek sculpture and architecture and ornament were produced under conditions and with aims totally different from those with which we are familiar in modern life. They belong to another world. Young men and women in blouses and aprons sit and copy the casts of Greek sculpture at the Slade School and other admirable institutions of the kind; but what relation is there between their minds and their habits of life, and these works which they draw and model? Do they even know why they draw and model from them?

It is perhaps some such reflection as this which has induced Professor Percy Gardner to produce a book to expound the spirit of Greek art.* As he observes, the value of Greek literature is much better understood in this country than that of Greek art, "for the simple reason that we are a literary nation and not an artistic nation." Whether his title, "A Grammar of Greek Art," is well chosen may be a question. A "grammar" of a subject suggests a rather more precise and technical exposition of methods than we find here. We quite agree that just as the poetry and prose of the Greeks is expressed in a particular language, the words and grammar of which must be studied by those who would understand the literature, so works of Greek architecture and painting also are composed in what may be called a particular artistic language. "The words of that language are the strokes of the brush and the chisel"; so far we are within the region of grammar; but the author goes on—"these are put together in order to embody Greek ideas in ways which are distinctive and not like those adopted by any other people; certainly unlike those of modern art. The object of the present work is to set forth, as simply and directly as possible, what these ways are." This is surely going quite beyond what is generally understood by "grammar." A French grammar gives us the framework and construction of the French language, but it has nothing to do with expounding the quality of French literature. "The Spirit of Greek Art" would better have described Professor Gardner's book, though no doubt "A Grammar of Greek Art" is a better bookseller's title.

The object, at any rate, is to bring home to the general reader a clearer sense of the meaning of Greek art, and the aim with which it was produced. And his first chapter, on "the General Character of Greek Art," is a most useful one at the present time, for it combats entirely and conclusively the heresy which has been set up by some recent critics, that Greek art is realistic, so that a man who models a horse just as he sees it is doing as the Greeks did. Realism is the endeavour to represent what you see exactly as you see it. There is no such realism in the sculpture of the greatest period of Greek art. The aim of the Greek sculptor (as probably of the Greek painter, if we knew enough of his work) was to found upon the observation

* "A Grammar of Greek Art." By Percy Gardner, Litt.D., Lincoln and Merton Professor of Classical Archæology in the University of Oxford. London: Macmillan & Co. 1905.

of nature something higher and more perfect than nature generally is; as the German critic (Denneker) quoted by Professor Gardner said of the Parthenon pediment sculptures—"They are as if founded on nature, yet I have never had the good fortune to see such nature." Greek sculpture aimed also at showing that which was permanent and typical in nature, not that which was peculiar and accidental. But "the idealism of Greece differed from that of modern times because its range of ideas was far narrower and its methods more simple." The individualistic element characteristic of most of modern art is not found in Greek sculpture; and the proof of this, as Professor Gardner says (or we might rather say the illustration of it), is found in the fact that, in judging of Greek statues, it is much easier to assign to them a date and a school than to attribute them to an individual sculptor. Some Greek archæologists, no doubt, will question this conclusion, but we believe it is correct; we have always felt a scepticism as to the attribution of special works (and even special fragments) to individual Greek sculptors, of which we hear so much among recent archæologists.

It is somewhat difficult to realise the distinction which ancient critics drew between the quality of ἦθος and πάθος in sculpture, or at least to realise what they intended by the former quality, which was attributed to Pheidias among others. Ethical quality in the modern sense of the word can hardly be said to have existed at all in Greek art, which had no "moral"; indeed, what we should call a moral element would probably have seemed to the Greeks something with which art had nothing to do. "Liddell & Scott" gives the secondary meaning of ἦθος as "custom, usage, habit," just like "mores" in Latin, to which our modern meaning of the word "moral" came to be attached. Probably the real meaning was that the quality of ἦθος in a statue represented that which was most central and typical in life; the πάθος of the later sculptors lay in the representation of a special feeling which was not universal and typical. The distinction can be recognised in modern works, though we should not define it in the same words. Perhaps one of the most essentially Greek works of sculpture since the Greek period is Donatello's St. George. There we have that quality of simplicity of conception and action which belonged to Greek sculpture, and the quality of ἦθος both in the ancient and in the modern sense. The ideal of the Christian knight prepared to combat the powers of Evil is a conception quite outside of the Greek mind, but it is expressed with a reticence and reserve which prevents it from interfering at all with the truly Greek qualities of repose, balance, and symmetry.

In recent sculpture, both in France and England, we are not without examples of work which is allied to Greek sculpture in its aims, if not equal to it in achievement. Wherever there is simplicity of motive and symmetry (in the true and original sense of the word) in design, we see the influence of the Greek spirit at work. But the modern conditions of work, and the modern spirit generally, are not favourable to this simple and abstract quality in sculpture. For (as we see in Donatello's St. George) it is in the spirit in which the work is executed, not in the choice of an "antique" subject, that the Greek quality in sculpture is illustrated. Thus Gibson's Venus and Diana figures are not Greek in spirit, they are but feeble imitations; and the most Greek thing that he produced was his Hunter and Dogs, a subject which might in itself have been modern, but which is treated in the antique spirit. As to the modern conditions which interfere with this abstract aim in sculpture, there is a remarkable passage in Professor Gardner's work, which is worth quoting at length:—

> "There is also a marked contrast between the conditions under which the ancient and the modern sculptor work. In our days the sculptor ordinarily works from a single model, and the works exhibited at the Royal Academy show that the models accepted by modern sculptors are often of a very poor type, ill-nourished and ill-trained. Among a people predominantly urban, and living under unhealthy conditions, the admiration of robust beauty in man and woman is apt to give way to what is fashionable or smart. The danger of physical degeneracy hangs low over all the nations of Europe, our continual competitions, our restless travellings, our reckless sacrifice of all that restrains, in our endeavours to reach certain ends, make a gospel of rhythm and moderation seem to us dull and poor. It does not spur our jaded energies, or rouse us with a stimulating appeal. And yet, as it seems to me, unless the English races return in some measure to the artistic ideals of Greece, they are in the long run doomed. Overpowering ugliness of surroundings, physical degeneracy, nervous exhaustion leading to sterility, all these have, in spite of the efforts of a few, steadily gained upon us in recent decades; and the road which they mark leads to destruction."

In short, the feverishness and restless aims of modern art are the reflection of the character of modern life, just as the severe restraint and simplicity of Greek art were the reflection of a simpler and more wholesome ideal of life. This warning as to the close relation between the character of life of any epoch, and the character of its art, is in accordance with the whole scope of Professor Gardner's book, which is to show that Greek art of all classes—whether architecture, sculpture, or drama—was based on the same principle of a broad simplicity in general conception, and a conscientious attention to perfection and symmetry in detail; taking the word "symmetry" in its original signification, that of a carefully studied relation of the parts to each other and to the whole, nothing being suffered, for the sake of a special effect, to overweight or interfere with the general design. And this idea of the close relation between the nature of the life and the nature of the art of a people is one to be seriously considered in the present day. We live in an age of experiments and eccentricities in art, which tends to make it an additionally disturbing influence instead of a discipline to our minds. Life and art re-act on each other; and the adoption by artists of more sober and less eccentric ideals might even render art a corrective to some of the weaknesses of modern life, instead of being, as it is too often at present, a mere reflection and encouragement of them.

In no art more than in architecture do we see the defection from the antique ideal, the necessity for a more severe and restrained spirit. In regard to the obvious qualities of Greek architecture, (which means practically Greek temple architecture, since that is almost all we know), Professor Gardner writes well and forcibly. He fully realises the significance of that study of rhythmical proportion of parts which was obviously, to the Greek architect, of an importance which it is difficult for us now to fully understand. The subject of proportions in temples, as the author remarks, is in fact one which is "almost bottomless." We have learned something about it, but we do not know how much more there may be which we have never learned and never shall learn. What is unquestionable, from what we do know, is that the Greek architects, and in all probability cultivated Greeks generally, must have had a refinement of perception in regard to small details of architectural design which we do not possess now, or such refinements as they studied and carried out would hardly have occurred to the architect and would have been thrown away upon the spectator. There must have been, in their comparison of lines and proportions, something partially though not precisely analogous to our perception of harmony or discord in regard to sounds; and unless this perception could be revived it is impossible for us to see Greek architecture as its authors saw it.

That is one reason, perhaps, why the attempt to revive Greek architecture in England a century or so back proved as complete a failure as Gibson's attempt to revive Greek sculpture in figures of Venus and Diana; even without considering the fact that we attempted to do in stone what the Greeks required marble for. The additional objection, that the Greek temple is no model for what we require, may be pushed too far. We do not see why the general plan and design of a Greek temple, if we could settle on an effective method of lighting it, might not be a very suitable model for a modern place of worship. But all these considerations are quite apart from the real question, what can we learn from the study of Greek architecture? Its real lesson to us is that of reserve, simplicity, and scholarly study of every detail. In that last element lies, above all, the intrinsic difference between the antique and the modern spirit in architecture. The outbreak of eccentricity in modern architecture, just after the collapse of the Gothic revival, has to some extent given way to a growing feeling in favour of symmetrical design and planning, and Renaissance models. But where, even so, do we see anything like the care and thought bestowed by the Greek architect in elaborating comparatively simple details so as to give them the highest possible finish and expression? The modern architect may reply, and with justice, that he is not allowed time for that. But however the blame for it may be apportioned, that is the essential difference between the Greek and the modern spirit in architecture. Simplicity with perfection was the aim of the Greek. Imperfection carried off by picturesque multiplicity is the modern aim. To get the antique spirit we need to come to the position of rejecting every detail that is not necessary and that is not perfect, in itself and in its relation to the whole.

NOTES.

The Proposed Shakspeare Memorial.

THE Shakspeare Memorial Committee, at their meeting last week, came to a series of recommendations with most of which we are more or less in agreement. They wish that the memorial should be "an architectural one, including a statue"; they had much better have said, "including a bust or a statue," leaving it open to the sculptor to give the head only, avoiding the *crux* of the realistic figure. They propose that the London County Council should be requested to appropriate a site for the memorial, if possible on the south side of the Thames and near the site of the proposed County Hall, and also that an application should be made for a site in one of the Royal Parks, by way of having two strings to the bow. We should think the latter preferable; there is something appropriate in the south bank of the Thames site, no doubt, in view of Shakspeare's theatrical connexion with that district; but a site in one of the parks would give a much better chance for a fine effect. The Committee ought at any rate to bear in mind that they must decide on the site before arranging the competition for the designs; the design must be made for the site. The proposal that the competition should be open to the whole world is likely to be criticised; we might surely think that Shakspeare should be commemorated by the work of English artists. In one point the Committee is remarkably English in its constitution; there is not a single artist on it, except one or two amateurs. In France two or three of the leading artists of the day would certainly have been on such a Committee—it would have been deemed incomplete without them. We should have thought that at all events the Presidents of the Royal Academy and of the Institute of Architects might have been invited to form part of the Committee; and unless this is done French artists (if the competition is to be international) will not have confidence enough in the Committee to compete. Another very English incident is that Sir Alfred Lyall, who is a member of the Committee, took the trouble to write to the *Times* to purge himself of the discredit of having voted for a work of art; he alone having voted against the proposal for "an architectural memorial including a statue." Sir Alfred Lyall is a typical example of the best class of English public man—talented, upright, and self-sacrificing in the cause of his country; but the typical English public man cannot endure art, or the proposal to spend money on art.

The Great Western Railway Case.

THE verdict for the plaintiff in the case of Davies *v.* the Great Western Railway Company is perfectly justifiable on the evidence. A saddle tank engine had been attached, at the last stoppage, in front of an express train engine, in order to assist it up a steep "bank." The tank engine was derailed, producing an accident with fatal results. The company set up the theory that the derailment was caused by the breaking of a connecting-rod through a hidden flaw, but could not support it by evidence. Conflicting evidence was given as to speed; the plaintiff and others maintaining that the speed at the time of the accident was exceptional, the employees that it was only thirty-five or thirty-six miles an hour. Evidence as to speed in such cases is always difficult to obtain; the evidence of ordinary travellers is worth little, because hardly any of them have ever taken the trouble to test speed with mile-posts and watches; and the evidence of employees is not disinterested. We think it probable, however, on the evidence, that the speed was considerably higher than the company admitted. The point is, that to couple in front of an engine built for speed one built rather for power than speed, with a top-heavy tank and a shorter wheel-base, and drive them together at a high speed, is a proceeding opposed to common sense, and is courting disaster. When the incline was reached no doubt the pull of the tank engine would have come into play; but we have not the slightest doubt that when the accident occurred the tank engine in front was not pulling, but was being pushed by, the faster engine in the rear, and in such a case any unusual lurch or unsteadiness would lead to the front engine being pushed off the rails by the one behind it. The moral is that whenever two engines of different quality are attached to a fast train, the superior and steadier one should be put in front, when it will keep the other steady; and that to put the inferior engine to lead the train is a blunder which may prove, as in this instance, a fatal one.

Steam Traffic on Roads.

THE case of the Attorney-General *v.* Scott, on which we commented in our issue of July 16th, 1904, has been appealed (see current *Law Reports*) and the judgment of the court below has been affirmed. The defendant was the owner of a quarry, and he used traction engines to haul the stone from his quarry to a neighbouring railway station, and in so doing used a section of road repairable by the Monmouthshire County Council. The action was brought by the Attorney-General at the relation of the County Council to restrain the defendant from using his traction engine on the roads so as to cause a public nuisance. The defendant was the holder of a licence under the Locomotive Act, 1898, and there was no allegation that the plant was improper or that the traffic was improperly conducted, the claim simply being that the frequency of the traffic caused the roads to get into a dangerous state and thus constituted a nuisance, and there was no question as to expenses for extraordinary traffic under section 23 of the Highways and Locomotive Act, 1878. Section 13 of the Locomotive Act, 1861, which has not been repealed, provides that no one shall use a locomotive engine so as to cause a nuisance, and in this case it was alleged that the traffic did cause a nuisance. The defence was that the traffic was not the cause of the nuisance, but that it arose from the neglect of the County Council to properly repair and maintain the road. The case has been the cause of much litigation. The plaintiff in the first place obtained an interim injunction, and on this the defendant appealed, but the court held that, as a *prima facie* case of nuisance had been made out, the defence at that stage did not avail to prevent the interim injunction from being granted, and incidentally the court decided that the powers granted to the local authorities by the Locomotive Act, 1898, to regulate locomotive traffic by by-laws had not taken away the right to proceed for nuisance under section 13 of the Locomotive Act, 1861. At the trial of the action the judge found that the condition of the road was partly due to the traction traffic, partly to haulage by horses and carts, partly to the ordinary traffic, and partly to the weather, but primarily and chiefly to the failure of the County Council to maintain it in a fit state, and that thus the blame wholly attached to them since the traffic was such as ought to have been expected, and he held that the action failed. This decision on the facts has been confirmed by the Court of Appeal.

The Ventilation of Tubular Railways.

So far as can be judged by the senses, the directors of existing tubular railways appear to have given up the ventilation of their tunnels as a bad job, and the condition of the atmosphere in these subways grows worse and worse, or, to put matters in the most favourable way, remains exceedingly objectionable. As we have pointed out on previous occasions, the systems in question were designed without any competent assistance by ventilating experts, and to place them upon a proper footing now would involve far more outlay than the companies are likely to incur unless forced to do so by Parliament. Various expedients have been suggested from time to time, and some of these have been tried without satisfactory results. One of the most likely proposals of the kind is contained in a pamphlet of which we have recently received a copy. The author proposes that foul air ducts should be formed between and outside the lifts in each well, and that suitable valves and flaps should be provided so as to enable the lifts to act as pumps for forcing foul air up the ducts, fresh air being supplied by way of the staircase well, which would be fitted with swing doors to prevent short circuiting. The general idea of the scheme is good, but we think that as propounded its effect would be limited to the stations, and that the bulk of the fresh air admitted would be ejected without doing anything to improve the condition of the tunnels. The whole problem is a difficult one, requiring for its solution the best expert advice, as well as a considerable expenditure of money.

Heavy Traction Traffic.

WHEN the order of the Local Government Board was issued with reference to heavy motor traffic we pointed out in our issue of January 14 that such extreme weights unsupported on rails might cause not only inconvenience but even injury to the owners of house property. A correspondent in Saturday's *Times* gives evidence which shows our fears were abundantly justified. Not only are the amenities of life interfered with, but actual structural damage is sustained

by buildings, a loss which falls upon the owners without redress. Such inconvenience and loss must be submitted to in communities where the benefit of the larger number has to be considered at the expense of the few, but this is the exact converse case; that the very few may carry in one load what might equally well be made two loads the comfort, health, and property of the larger number have to be ignored. We can only ask, is it reasonable?

The London County Council Steamers.

AN experimental trip on one of the London Council's new Thames steamers has not impressed us with very much satisfaction at the result of an enterprise which was heralded with such great promises of a service far superior to what had been seen on the Thames before. The deck seating is adequate and well arranged, but in other respects there is not much evident superiority to the old "Citizen" line. The boats are not nearly fast enough; they are passed by ordinary screw tug-boats of smaller size. Why it was decided to have paddles, which are so much more in the way than screw propellers, it is difficult to understand. The general result, however, is that on the Thames we are still quite behind the fast and frequent service of the screw steamers on the Seine at Paris.

Bedding Stone Masonry.

ONE of the most important rules for observance by the mason is that all stone consisting of layers or "beds" should be cut so that the beds may be parallel with the horizontal joints. Then the principal pressure will act in a direction perpendicular to the natural strata of the material. So far as our knowledge extends, this essential condition is generally insisted upon by architects and engineers in Great Britain. It seems to be somewhat neglected in the United States, the most recent example being afforded by Holy Trinity Church, in Brooklyn, a Gothic building of large size and considerable architectural merit. Unfortunately, its construction involved the serious defects that the stone selected was not particularly suitable for resisting climatic influences, and was laid with the natural beds in a vertical position. The results have been that the walls and spire have suffered serious disintegration, which will have to be made good at a cost of something like 20,000*l*., a somewhat heavy price to pay for the ignorance of the architect, or his neglect to include a necessary clause in the specification.

Electric Earthing.

IN the *Journal* of the Institution of Electrical Engineers published last week there is an important paper by Mr. W. W. Lackie on the "earthing" of electric light systems. We are glad to see that electrical engineers are at last seriously considering the problem, and that testing the insulation resistance of a network is now part of the regular duties of the staff at a central station. Mr. Trotter, of the Board of Trade, has been indefatigable in educating station engineers on the importance of regulating the pressures of their mains to earth, and his model, described in this paper, of Mr. Alexander Russell's statical method of illustrating what happens in practice will be understood by those whose theoretical knowledge is limited. Mr. Lackie points out the difficulty of obtaining a good earth. This difficulty is very familiar to those who have set up lightning rods, and it is interesting to learn how engineers surmount it. The paper is mainly concerned with electric lighting in Glasgow, and, as the pressure is 500 volts between the outer mains and 250 volts for each lamp, very special precautions have to be taken against shock and fire risks. We were surprised to read that during the years 1902, 1903, and 1904 there were no less than thirty-three fires which were undoubtedly due to defective electric light installations. Although there are 11,000 installations, we think that this number is much too high. Fifteen of the fires were due to the melting of gas pipes by a current of electricity. We agree with the author in thinking that lead gas pipes should not be used in the same building as electric wires. We are also in agreement with most of his conclusions, but they will not be welcomed by those engineers who are advocating cheapening the cost of distribution. It is stated that, owing to the adoption in Glasgow of the maximum permissible voltage, consumers get light much cheaper than if the old 100-volt pressure had been retained. They undoubtedly get electric power more cheaply, but, judging by our tests of the efficiency of 250-volt lamps, they certainly pay as much for the light and considerably more for the lamps.

Dock Extension at Liverpool.

THE Mersey Docks and Harbour Board have passed the scheme for an enlargement of the Liverpool Docks at an estimated cost of something over four millions. Meanwhile, London looks on, whilst Liverpool, Dover, Antwerp, Rotterdam, and other continental ports vie with each other in improving the accommodation which they offer to ship-owners. When the new works at Liverpool are completed ships 1,000 ft. in length will be able to enter the docks; a length not yet attained, but which must be regarded as within the bounds of probability. In addition to increased size and depth of docks, the warehouse accommodation will be improved, double-story sheds 150 ft. wide being part of the proposed plan. Not only ports convenient for call, but suitable for the housing when not at sea of immense steamers are now necessary, and for many years to come the dock accommodation at Liverpool will check the advance of rivals which, however convenient they may be—as Dover and Plymouth—as ports of call, have not the first-class dock system of Liverpool. Meanwhile, the Thames Conservancy proposes only to deepen the river and to double the rates on shipping!

Paul's Cross.

IT is stated that the testamentary dispositions of the late Mr. H. C. Richards, K.C., M.P., include a bequest of 5,000*l*. to the Dean and Chapter of St. Paul's for the rebuilding and upkeep of Paul's Cross in memory of his brother and grandmother. In April, 1879, the late F. C. Penrose discovered the foundations of the cross in the churchyard on the north side of the cathedral, towards the east end. The original cross, having been destroyed by lightning in 1382, was rebuilt of timber with a leaden conical roof upon a substructure of stone by Thomas Kempe, who was Bishop of London in 1448-89. It formed the scene of public recantations, penances and denouncements, of the proclamation of royal marriages and of naval and military victories, etc., and of the preaching of the Sunday sermons in the forenoon, which were generally of a polemical or political nature, and inspired by the Government of the time being. It seems that the name of "Paul's Cross" first occurs in 1259, when Henry III. commanded the Mayor to cause the attendance there of all youths in the City to take an oath of allegiance to him and his heirs, Kings of England. The cross, with others in London and Westminster, was pulled down in 1643 by an order of Parliament. There is a good view of it, *temp.* James I., in the possession of the Society of Antiquaries, reproduced by Wilkinson, and another in Henry Farley's "St. Paul's Church her Bill for the Parliament," 4°, 1621.

The Japanese Armour Exhibition.

THE loan exhibition of old Japanese arms and armour, at the rooms of the Society of Painters in Water-colours, is a fine one, but with the exception of the suits of armour it does not show us anything with which we are not already familiar. There are a number of the well-known finely-curved swords with their straight handles elaborately decorated, but in such a way as not to interfere with grasp; nearly all of them without guards, for the flat circular sword-guards, perforated in various designs, seem to be regarded as entirely separate objects, a number of which are exhibited in separate cases. Some of the helmets are very curious and effective in design; some are grotesque masks with immense sham moustaches; for in the day when these things were worn it would seem to have been the duty of a Japanese warrior, as it is now of a Chinese, to "look fierce" as a preparation for fighting. One of the helmets exhibited shows the same construction, in successive flat rings of metal rivetted together, which attracted notice in the horsemen's helmets in M. Rochegrosse's picture of the visit of the Queen of Sheba to Solomon; only the outline of the whole is different. The modern fighting dresses, shown in a separate case, are, in their simple practical character, a remarkable contrast with the barbaric pretentiousness of the old armour. We have seen it remarked that the design of the ancient Japanese arms, in spite of their beautiful decoration, is entirely subservient to practical purposes; which seems rather nonsense. Swords of the sabre shape which have no guard for the hand, in a cut-and-thrust *mêlée*, other than the mere disc which is efficient only against a rapier-thrust with the point, are certainly not well-designed weapons; nor are muskets where the greatest thickness of the stock is at the trigger, and the shoulder-butt

is the thinnest part of the whole; nor is the portentous stirrup, beautifully damascened outside and finished with red lacquer inside, a piece of furniture that would recommend itself to a modern rider. The beauty of ancient arms lies in surface decoration; the beauty of modern arms lies in finish and fitness, and it may be questioned whether it is not the higher beauty of the two, though a little unobtrusive surface decoration would be quite allowable.

The Bucks Archæological Exhibition at Aylesbury.

AN interesting exhibition, which was opened by Lord Rosebery in a characteristic speech, was held last week at Aylesbury to celebrate the Jubilee of the Bucks Archæological and Architectural Association, a society which has done much excellent work in arousing an interest in and preserving local antiquities in this county. The exhibition contained some very interesting objects, such as the portrait of Cromwell, lent by Lord Carrington, and that of his daughter Elizabeth, lent by the Trustees of the Chequers Court estate. A number of prints of old buildings recalled very well the appearance of the county in the XVIIIth century. Among these were two small prints of Burke's house at Beaconsfield, a historic mansion which was destroyed by fire after his death, and of which engravings are now the only evidence. The collection of large photographs by Mr. C. E. Keyser of Norman doorways, many of which have been reproduced in archæological journals, was also specially noticeable, but the exhibition suffered somewhat from a want of space and of systematic arrangement, the wall space being very limited. It is to be hoped that such local shows as this will be continued in other centres, for they draw people's attention to archæological matters, and thus tend to produce a spirit favourable to the preservation of antiquities of all kinds in the locality.

A Collection of Old Wedgwood.

THERE is at present on view at Mr. Charles Davis's Galleries, 147, New Bond-street, the collection of old Wedgwood formed by the late Lord Tweedmouth. The collection is an exceptionally fine one, and will be a revelation to many people who have not had an opportunity of studying Wedgwood's productions. Continental and provincial museums are more favoured in respect of Wedgwood ware than the Metropolis; it is to be hoped that the new buildings at the Victoria and Albert Museum may some day be the home of a collection of Wedgwood worthy of the nation. Wedgwood is probably the one ceramic art in which we are supreme and unassailable. The prominent position of Wedgwood is due partly to his invention of the body known as "jasper," partly to his success in enlisting other great artists—such as Flaxman—to his service, and, lastly, and principally in our opinion, to the attention he gave and the importance he attached to form. There are at the present day inventors as patient and laborious as Wedgwood and artists as accomplished as Flaxman, Davaere, Harkwood, and the rest; but there are, unfortunately, few, if any, modellers and designers at the present day who realise the primary importance of form as did Wedgwood. No amount of beautiful colour or thoughtful ornament can conceal or overcome the initial error of bad form and lack of good proportion either in a vase or a piece of architecture. This is what Greek art taught Wedgwood, and his productions are no mere *re*-productions; here and there is a classical exercise admirably performed, but the majority of the work shews the originality of genius. Exquisite as are the urn-like vases, such as Nos. 57 and 58 in the catalogue, the jardinières (Nos. 74, 81), and the caskets (No. 82), the box (No. 134), the plaques (Nos. 37 and 21), are more important works of art; they represent a lifetime spent in overcoming the difficulties of inventing a material and in closely studying the greatest period of art—a combination of activities that has always proved most favourable to the production of art.

University Degrees in Architecture.

ON Saturday, the 8th inst., the first students to take a B.A. degree in architecture graduated at the University of Liverpool; one (Mr. H. H. Hill) obtaining Second Class Honours, the other two (Mr. H. Thornton and Mr. F. Thorpe) obtaining a Pass degree. Though the architectural school at the University has been in existence some ten years, till three years ago, when these students started their course, no one had attempted to take a degree; it is hoped now that there will be many more. The major portion of the examination consisted in the students making (as nearly as possible under the conditions of actual work) a complete scheme for a Students' Club for the University, for which an actual site was given them. For this design they had a clear month, with access to the library, museum, etc. In addition, each student before sitting for the examination had to submit a complete set of measured drawings of an approved building, and a thesis on it and cognate work. The buildings selected were—Gandon's Custom House, Dublin; Gibbs's Senate House, Cambridge; and Wren's Orangery, Kensington. These it is hoped will be published soon in a University Sketch Book on the lines of the Architectural Association Sketch Book.

CONGRESS OF FRENCH ARCHITECTS.

THE annual Congress of French architects took place last month from the 18th to the 21st of June, being held partly at Caen and partly in Paris. A well-known Paris architect who attended the Congress was kind enough to send us the following short report of it, of which the concluding portion did not arrive till too late even for last week's issue. Though it is not usual for us to give a report so long after date (as everyone knows, French papers are very indifferent in the matter of punctuality of reports), we prefer to put a *resumé* of the proceedings of the French Congress on record in our columns.

Forty members of the Congress, accompanied by some ladies, left Paris on Sunday, June 18th, meeting at Lisieux another contingent of architects from Caen. Four hours were devoted to visiting some of the old half-timbered houses which make Lisieux so picturesque, also the cathedral of St. Pierre, the church of St. Jacques, the Tribunal Civil, the episcopal palace (which contains a remarkable gilded chamber of the Renaissance period), and the Jardin de l'Etoile.

On Monday, the 19th, the business of the Congress commenced in the Salle des Sociétés Savantes at Caen, under the presidency of M. Auray, architect and deputy-mayor of Caen, supported by M. Bartaumieux, the Vice-President of the Société Centrale, and MM. G. Olive and G. Rozet, secretaries of the Société Centrale and of the Congress.

Some notices of the architects of Caen were read by M. Auray, and M. Olive furnished almost a biography of M. Auray *père*, one of the most distinguished architects practising at Caen in the latter half of the XIXth century; and M. Lucas, of Paris, read a paper on "La Conservation des Monuments du Passé." Leaving on one side the recent discussions in Parliament on the separation of the Church and State, he commenced by referring to the study of the subject at the archæological congress at Bonn in 1868; a study taken up again from time to time and brought to a point at the congress of the "Association Litteraire et Artistique" of Marseilles last year, and referred also to the work of A. de Caumont, who at Caen itself had founded, in 1833, the French "Société Archeologique," the seventy-third congress of which was being held that week, in the district of l'Oise, under the presidency of M. Eugène Lefevre-Pontalis. "Le Droit de l'Auteur sur son Œuvre," which both artists and lawyers in France had accepted as the real basis of property in intellectual work; and "Le Domaine Public Payant," which presupposed a small contribution from everyone who visited or who published an illustration of any work which had become public property—these were the two principles which M. Lucas wished to see applied in the case of all ancient monuments, as governing the principle of conservation and providing funds for reparation. After arguing that it was not only a matter of honour but of utility for a nation to preserve the monuments which were important pages in its history, he urged his colleagues of the Société Centrale and of the provincial architectural and archæological societies to unite in endeavouring to obtain from the Government authority to make a charge in respect of visits to or publication of ancient monuments, and to apply the revenue thus obtained towards keeping such monuments in repair.

M. Georges Harmand, advocate, at the sitting at Paris on the 24th, took up the same subject from the lawyer's point of view; and at its final sitting the Congress passed unanimously a vote expressing the view that had been formulated by M. Lucas at the meeting of the 19th; their vote supporting the principle of contributions from visitors and illustrators towards the expense of the preservation of ancient monuments. This vote will be communicated to the Minister of Public Instruction and Fine Arts, by the hands of the President of the Société Centrale and of the Under-Secretary of State for Art.

After the morning sitting on the 19th, the afternoon was devoted to visits to the museums of Caen, the churches of La Gloriette, Saint-Etienne-le-Vieux, and Saint-Etienne (l'Abbaye aux Hommes); the Lycée Malherbe, installed in the ancient buildings of the Abbaye aux Hommes; the churches of Saint Nicolas and Saint-Sauveur; some of the old houses in the city; and lastly to the Hôtel de Ville, in connexion with which there was an art-exhibition to be seen.

The 20th was devoted to visits, by train or carriages, to various buildings or places of interest—the church of Ouistreham (restored by M. Ruprich-Robert); the church of Langrune, with its remarkable tower of perforated masonry, or masonry *à jour;* the church of Bernières; the abbey of Ardennes, now converted into farm buildings, and the Renaissance châteaux of Creully, Fontaine-Henry, and Lasson. The day was finished by a dinner presided over by M. Nénot, President of the Société Centrale and of the Congress.

Wednesday, June 21, was also a day of promenading; in the morning at Caen, on the banks of the Orne and in the Sadi-Carnot-avenue; in the afternoon, an excursion to Bayeux and Balleroy. At Bayeux the visitors made their first halt at the Palais de Justice, installed in the chapel of the ancient bishop's palace, dating from the commencement of the XVIth century, and

which still possess some ancient windows in the apse, now transformed into a Council Chamber. Then came the Hôtel de Ville, another part of the same ancient palace, but rebuilt in the XVIIIth century, and which contains the Musée Doucet. At the Cathedral of Nôtre Dame was seen the Romanesque crypt and remains of a Romanesque arcade of the XIIth century; the nave and the two towers of the western façade, the latter clothed with a Gothic ornamentation at the end of the XIIIth century; the chapter-house of XVth century; and the central tower, dating from the end of the XIVth century, but unfortunately crowned, during the Second Empire, with a metal cupola which is quite out of keeping with the rest. Visits were subsequently made to some ancient houses and to the museum to see the well-known tapestry. Before returning to Caen the party visited the Château of Balleroy, a work of François Mansard, and decorated with paintings by Miguard; a château which has preserved its ancient appearance untouched. The party were received by the present owner, the Marquis de Balleroy.

The work of the Congress was resumed at Caen on Tuesday, the 22nd; but the unavoidable absence of M. Frantz Blondel, of Versailles, who was one of the Committee for dealing with the subject of the establishment of district schools of architecture in France, prevented that part of the programme from being fully gone into. M. Dubuisson, of Lille, a former President of the Société Regionale des Architectes du Nord, read a paper on the subject "Expropriation dans un but de Salubrité Publique"; a subject which was taken up again at the meeting at Paris on the 24th, and led to the passing of a resolution demanding the intervention of the architectural societies with the Government, to urge the passing of a law for "Expropriation par Zones," on the lines of the existing Belgian law on the same subject.

On the afternoon of the 22nd the party concluded their proceedings at Caen by visits to the churches of Saint-Pierre, Saint-Gilles, and the Abbaye-aux-Dames, to the Hôtel d'Escoville and the Hôtel Mondrainville, and one or two other buildings of interest, and in the evening returned to Paris by a special train put at their service by the railway company de l'Ouest.

The morning of the 23rd was reserved for the report of the "Caisse de Defense Mutuelle," now arrived at its twentieth year of existence. M. Nénot, as President of the Société Centrale, occupied the chair. The Report stated that during the past year more than fifty cases, old and new, had been considered by the Committee, in six of which those concerned had been assisted from the funds of "Caisse." Since its foundation, the Caisse has paid forty seven thousand francs in assistance to architects engaged in legal proceedings, and in spite of a serious loss from a bank failure, has still a fund of twenty-three thousand francs in hand.

On the afternoon of the 23rd some serious questions were discussed in regard to the amendment of the law respecting the Responsibility of Architects, and the law in regard to party-walls, "servitudes," etc.

Since the appointment last year, by M. Valli, Garde des Sceaux, of a special Committee to study the question of the revision of the Code Civil, the French architectural societies have not been idle; Committees have worked and delegates have been appointed to represent the Societies before the Ministerial Committee. At the present meeting the discussion—in which the chief speakers were M. Genault, delegate of the "Association Provinciale des Architectes Français," and M. Harmand, advocate of the Cour de Paris—was important and significant, and concluded with a resolution in favour of a general combination of the Architectural Societies to present a joint memorial to the Government in regard to the modifications desired in the Code Civil.

At the meeting on the afternoon of the 24th the annual distribution of "recompenses" took place, under the presidency of M. Henri Havard, Inspecteur-Général des Beaux-Arts. Among the recipients were architects, archæologists, jurists, authors of studies on architecture, ancient and modern; contractors, working-men, and apprentices representing the "personnel du bâtiment," etc. Among them may be mentioned specially the "medaille d'honneur" conferred on M. L. Lenoir, architect, of Nantes, in recognition of a long and honourable career; the silver medal awarded to M. Hénard (Paris) for his study on the improvements required in Paris at the present moment; a silver medal to M. Fernand Lapeyrère, architect, of Paris, the author of a study in regard to the improvement of Bordeaux similar to that of M. Hénard on Paris. Two other special medals were awarded, not at the afternoon meeting, but at the dinner in the evening at the Hôtel Continental, presided over by M. Dujardin-Beaumetz, Under-Secretary of State for Art; when M. Nénot presented the gold medal of the Société Centrale to M. Guadet, "en consécration de sa noble carrière et en souvenir de son beau livre 'Elements et Théorie de l'Architecture'"; and the silver medal of the Société to M. Chas. Lucas, in recognition of the great services which he had rendered to the Société Centrale and to the Caisse de Defense Mutuelle. After this, the chairman, in responding to the toast in his honour proposed by M. Nénot, promised, at the close of an eloquent speech, to do his best, in his official position, to give the art of architecture its due place and the satisfaction of its legitimate demands. After other formal toasts, the proceedings of the Congress came to an end with the close of the banquet.

THE LIÉGE INTERNATIONAL EXHIBITION.

ALTHOUGH not to be compared with the Paris Exposition of 1900, the International Exhibition of Liége may justly be characterised as one of the most noteworthy undertakings of the kind which have been organised within recent years. The idea was first mooted in the year 1897, but so great were the obstacles to be surmounted by the promoters that the realisation of their scheme has only recently become possible. From one point of view the delay has done good rather than harm, for the national fêtes and other functions which this year commemorate the seventy-fifth anniversary of Belgian independence will have the effect of conducing very largely to the success of the exhibition.

As the industrial capital of the country and in the very midst of the mines, ironworks, and engineering establishments which give Belgium an important position among the commercial countries of the world, Liége offers a most suitable site for the holding of a world's fair. Situated in the valley of the Meuse, and built along the banks of that river, the town is of such configuration as to facilitate access to the various entrances of the exhibition, an operation which is rendered still more easy by the excellent services of electric cars running past the principal railway-station.

The total area covered by the grounds and buildings is about 170 acres, the greater part of which is situated at the confluence of the Meuse and the Ourthe, and the remainder in the Parc de Cointe, on the picturesque plateau of the same name overlooking the town. This portion of the exhibition is also accessible by a service of electric cars. The central site is divided into four parts by the Meuse and the Ourthe and by La Derivation—a new channel cut for the latter river. The old bed of the river formerly swept round the present exhibition grounds on the east side of the Meuse, but has now been drained and filled up. This has made necessary the building of several bridges, by means of which all parts of the exhibition are placed in communication.

On the western bank of the Meuse is the Quartier de Fragnée, with a monumental entrance of semi-circular plan at the rond-point de Fragnée. On the eastern side are a *quartier* formed by the Parc de la Boverie and the Jardin d'Acclimatation, and the Quartier du Vieux Liége, the first two bounded on the opposite side by La Derivation and the latter by the Ourthe, while the two quarters are separated by a weir. Beyond the Ourthe and La Derivation is the Quartier de Vennes, which is the great centre of industrial and engineering exhibits.

While dealing with the topographical aspect of the exhibition we may conveniently draw attention to one or two of the bridges mentioned above. Le Pont de Fragnée crosses the Meuse at a point where that river is 170 metres wide. The bridge is of the three-hinged type, and includes three steel spans, with masonry piers and abutments, the central span being rather longer than those at either side. The arched ribs of each span support the platform above by means of vertical members, and to compensate for the somewhat narrow proportions of the bridge the foot-walks are carried by cantilever brackets. The light and graceful steel construction was executed by the Société John Cockerill from the designs of M. Demany, the architect of the bridge. Some fine sculpture executed by the Belgian artist M. Victor Rousseau deserves special mention, but we are bound to say that the effect of the columns at the entrance is anything but happy. Another new bridge in this vicinity is the Pont de Fetinne, crossing the Ourthe. This work is not of sufficient interest to demand detailed description, but is important as providing a continuation of the route beyond the Pont de Fragnée.

Another bridge rendered necessary by the diversion of the river Ourthe is the Pont Mativa, connecting the Parc de la Boverie with the Quai Mativa. In connexion with the construction of this bridge there were circumstances which deserve to be stated. The executive committee of the exhibition considered it essential that a structure of the kind should be provided at this point, and accordingly solicited the assistance of the Ponts et Chaussées. After examination of the site, however, the engineers of the department came to the conclusion that the time available was quite inadequate for the design and erection of a bridge. The exhibition committee were not discouraged by this decision, and placed themselves in communication with a Belgian firm in Paris, having relations with M. Hennebique, who undertook to complete a concrete-steel bridge in time for the opening of the exhibition. Work was commenced in November last, and finished in the early part of this year, at a cost of about 4,400*l*., or some 2,000*l*. less than that of similar works executed in masonry by the administration of the Ponts et Chaussées. The length of the bridge between abutments is 260 ft., including a river span of 180 ft. and two shore spans of 32·8 ft. each. The soffit of the central span is segmental, having a rise at the crown of about 12 ft. From the structural standpoint the bridge was considered as two cantilevers with unequal arms, the shorter arm at each shore end balancing the long river arm by the aid of the load furnished by the abutment. As the width of the bridge proper is only 18 ft., the side-walks are carried by cantilever brackets projecting 7·4 ft. on either side, thus making the platform 32·8 ft. wide. The arch ribs forming the central span are 2·46 ft. thick at the haunches, and diminish to 1·97 ft. thick at a distance of about 40 ft. from the crown. At this point the road platform joins the rib in monolithic construction. The platform has a uniform thickness of 7·9 in. up to its junction with the ribs, the central joint construction being 9·87 in. thick at the two ends and 9·05 in. thick at the centre. The platform, of concrete-steel, forms a tension for each cantilever arm, the ribs acting in compression as struts. In those parts of the bridge where the platform is separated from the ribs beneath three parallel vertical struts of concrete-steel 7·85 in. thick are provided. The roadway is paved with asphalt, and the side-walks are covered by artificial stone. One specially interesting feature of the Mativa bridge is that the foundations were formed by mechanical compression of the soil—a comparatively new process. The piers and abutments are supported on groups of concrete-steel piles driven into the gravel, which was compressed by the method mentioned. By continuing the reinforcement of the piles into the concrete of the piers and abutments, and by repeating the same treatment in the work above, the whole structure was firmly tied together and literally rooted into the ground. One other bridge recently built is of the suspension type, connecting the Quai de la Boverie with the Quai Mativa.

The visitor desiring to make the most of

his time among machinery and industrial products in the exhibition will find it best to take a tram right up to the main buildings in the Quartier de Vennes. So varied are the products shown in the Halles de l'Industrie and the Halles des Machines that a thorough inspection might easily be extended over a fortnight or more, leaving the evening of each day for examination of the pavilions scattered over the other quarters. In the following notes, however, we shall follow the course taken during our recent visit, and assume the entrance to be made at the northern end of the Jardin d'Acclimatation, close to the Pont de Commerce, on the eastern side of the Meuse. Inside this entrance the visitor will find the lines of a narrow gauge railway running through the garden and the Parc de la Boverie, crossing the Pont Mativa, passing the main entrance to the principal buildings, and terminating near the Halles des Machines, in the Vennes quarter. This railway was laid down by the Decauville Company, of France, and the rolling-stock consists of petrol locomotives and *char à banc* carriages. Resisting the attractions of this line, we enter the pavilion of the Great Eastern Railway, containing models of their steamers and other exhibits relating to traffic. In an adjacent pavilion the Syndicat des Amenblements show examples of gas and electric lighting apparatus, plumbing, hammered iron, and woodwork.

Four buildings devoted to the products of French colonies in Africa and Asia contain much that is of interest, and close to the Parc de la Boverie entrance gates is the pavilion of Norway, built of pine and covered with Norwegian slates, this exhibit being more instructive to professional men than the four mentioned above. A little way beyond is the Canadian pavilion, where, in addition to agricultural produce, will be found specimens of minerals, building stones, and timber.

The Palais des Beaux-Arts is a substantial structure of stone, in the style of the XVIth century, and after the close of the exhibition will be used by the municipality for art exhibitions, concerts, congresses, and other gatherings. It is no part of our intention in this article to deal with artistic matters, but we may briefly mention the fact that the contents of the Palais des Beaux-Arts include four classes of works:—(1) Paintings, water-colour and other drawings; (2) carvings of various kinds; (3) prints; (4) architectural drawings and models. The works exhibited include examples by the leading artists of many different countries, and, in spite of the fact that the interior offers a floor space of 2,500 square metres and a wall space of 625 metres long, temporary extensions have become necessary to provide accommodation for the large number of exhibits sent. Near by is the Pavillon de l'Art Ancien, a structure of heterogenous design, parts of the façades respectively representing the old Hôtel de Ville of Liége, the old Château des Prince-Evêques de Liége, (now the offices of the John Cockerill Company), and the fronts of old Liégoise houses. The interior contains an invaluable collection of masterpieces lent by the German Emperor, the Count of Flanders, numerous churches, and others, the examples of ancient Liége furniture being wonderful samples of cabinet work. The Bulgarian pavilion derives its chief interest from the fact that it was built from the designs of a well-known architect in Sofia. The Montenegrin and Servian pavilions, designed respectively by Signor Carbonare, of Venice, and M. Danief, of Liége, are other architectural studies. The pavilion of the Liége Municipality should by no means be passed by. It is designed in the old Mosan style, and contains exhibits by the departments of public works, education, and *l'état civil*. That of the first-mentioned service is particularly instructive, and relates chiefly to sewage systems, waterworks, and architecture. An exhibit in this part of the grounds that should not escape notice is a small pavilion of the *construction démontable* type, made by M. E. Gillet, of Paris. The building in question is fitted as a temporary hospital for colonial use, but similar structures are supplied for occupation as dwelling-houses, barracks, stores, and offices.

Passing over the Pont Mativa, we enter the Quartier de Vennes. The first duty of the conscientious visitor is to explore the triangular space in front of the main buildings. This will not take long, for only two or three pavilions need be entered. The first is one occupied by the Compagnie Internationale des Wagon-lits, who show three very fine sleeping-cars and one of indifferent quality. Although the announcement is made that these vehicles are open to inspection, they were most religiously locked on the occasion of our visit, and no one was in attendance to give information. Next door to the carriage-shed is the Palais Française de l'Agriculture, where a good assortment of agricultural implements and apparatus of various kinds will be found. Behind the Salle des Fêtes on the left is the Pavillon du Petit Outillage, in which are displayed tools produced by small makers, one of the most praiseworthy exhibits being steel saws by M. Alex. Ballon, whose name is well known in Belgium. In front of the principal entrance to the halls are the small pavilions of the Vieille Montagne Company, the Solvay Works, and one devoted to the cream separators of the Melotte Company.

Notwithstanding the fact that the main buildings cover an area of more than 100,000 sq. metres, they are very poorly built. The outer walls are of timber, with vertical strips of wood nailed over the joints. Some parts of the façades are improved by imitation masonry of the kind usual in exhibition buildings, and at the time of our visit the work of decoration was still in progress. The only façade having any architectural pretension is that in which the main entrance is situated. Here we have, in the centre, the Entrée Monumentale des Halles, and at either side two other entrances, the whole façade forming a connected series of buildings, which serve to hide the mean appearance of the galleries behind. The monumental entrance has a hall of horseshoe shape with a painted ceiling, and groups of sculpture near the front. The arched opening is flanked by side towers, and over the entrance-hall is a massive-looking rectangular tower, on the four turrets of which statues stand in uncomfortably perilous attitudes. The design as a whole is open to criticism from a constructional point of view, but it certainly goes a long way towards giving an imposing effect to the principal façade of the Halles de l'Industrie.

Entering the first hall, we find a main corridor extending from front to back in which are exhibited bronzes, decorative materials, furniture, and glass, all of Belgian production. On the left hand of the corridor the whole of the space is allotted to French industries, the products displayed being chiefly silks, drapery, millinery, and wines. Turning to the German section, on the right hand of the central corridor, we come to a most instructive exhibit by the Syndicate of Westphalian Coal Mines. This organisation shows a working model illustrating a novel method of unloading coal from vessels and delivering it into railway wagons. The coal is sucked up through tubes lowered into the hold of the ship or lighter, and discharged into hoppers above the railway line. A powerful air-pump is employed for the purpose of drawing the coal through the discharge pipes. Another model shows the effect of a firedamp explosion, and represents a system of life-saving apparatus, in which the principle of the diver's dress is utilised. Other models illustrate steel-work for the support of workings in place of the usual timbering, and various types of steam and electrically-driven mining-pumps.

The British industrial section covers less than half the space occupied by German exhibits, and cannot be regarded as a satisfactory representation of our national industries. Among the chief exhibitors are:—The Hull and Barnsley Railway Company, The Horsfall Destructor Company, of Leeds; The Glenboig Union Fireclay Company, The Linotype Company, Messrs. Jeyes (sanitary compounds), The Hallé Automatic Firearms Syndicate, Messrs. Eley Bros., and other well-known firms. There are other British exhibits in the Halles des Machines, to which reference will be made later. The remaining portion of the first building is taken up by sections allotted to the United States, Japan, China, Peru, and Italy, and by an International section, comprising the miscellaneous products of some thirteen countries in all parts of the world. The two main buildings are separated by the Chemin de fer du Nord Belge, which passes on a viaduct over the passage leading from one hall to the other. This line terminates in the Gare de Longdoz, and it is worthy of note that a special station has been provided close to the exhibition buildings for the convenience of visitors.

In the second group of halls there is a broad corridor forming a continuation of that in the first building. Here Belgium displays objects relating to the decoration of public buildings and dwelling-houses, electric-lighting apparatus, metallurgy, and coal mining. Several of the large colliery companies and syndicates exhibit interesting models and drawings. For instance, the collieries of the Liége district show models of automatic tipping plant, similar to that used in gold mining, of various systems of washing and screening coal, and of an ingenious coal-loading plant devised by M. Poppe, of Ghent. The Mariemont and Bascoup Collieries, whose output is more than one million and a quarter tons a year, exhibit various models of their mechanical plant, and the Levant du Flénu Colliery show a drawing of an elaborate screening apparatus capable of dealing with 300 tons of coal an hour, dividing the coal into fragments of different sizes, and regulating the proportions of the final mixture in accordance with requirements. These exhibits, and others devoted to miners' tools, iron and steel, bronze and metallurgical products generally, are thoroughly deserving of inspection.

On the left hand of the main corridor about half the area is allotted to the industrial exhibits of foreign countries, but, with a few exceptions, these are merely of general interest. The remaining area on the left is taken up by the Belgian Halles de l'Industrie, the subjects covered being hygiene, social economy, public assistance, and education. Passing to the right hand of the main corridor we enter another group of Belgian exhibits relating to civil engineering, navigation, the manufacture of firearms, carriages and motor vehicles, chemical industries, and sundry arts, sciences, and manufactures that need not be enumerated in detail. The remaining portion of the exhibition buildings is devoted to the Halles des Machines, which form the chief centre of attraction for engineering visitors.*

MAGAZINES AND REVIEWS.

THE *Burlington Magazine* includes an article by Mr. Laurence Weaver on "Some English Architectural Leadwork." The subject has become almost a commonplace one of late years, after long neglect; but Mr. Weaver's article contains a good many interesting suggestions, and is illustrated by good examples. Mr. Robert Dell contributes an article on "A Tudor Manor-House: Sutton Place, by Guildford"; a house which the writer claims, not without reason, to be not an ordinary Tudor house, but to have a style of its own. As he remarks, the stepping of the gables at the ends of the two wings is not an ordinary English device of the period, though it became common in Scotland. Mr. Dell suggests that Tudor architecture might be made a starting-point for a genuine architectural development. The idea has been broached before, but is worth consideration, especially in respect of domestic architecture on a large scale—what may be called mansion architecture. The illustrations of "A Seventeenth Century Wall-paper at Wotton-under-Edge," on which Mr. A. G. B. Russell writes a comment, are curious and interesting; it is a paper of Chinese origin, and apparently not a repeating pattern, but a continuous design. This being so, however, there is no advantage in having it on paper at all; it had better have been painted direct on the plaster. The excuse for papering walls (not in itself a very hygienic practice) is that by repetition printing it produces a rich effect by a comparatively cheap method. If the repetition is given up, the whole *raison d'être* of wall-paper vanishes.

* To be continued.

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The *Architectural Record* (New York) is almost entirely taken up, in the current number, by illustrations of dwelling-house interiors. There is one article on Parisian interiors, the illustrations of which are not attractive, being all marked by a kind of artificial and ultra-modern elegance which is not that of the best and purest taste. Among the large number of illustrations of American interiors there are a good many that are interesting as suggestions, the most original apartment being the ball-room in the Morse House, of which Mr. Ogden Codman is the architect. The following remarks from the first article in the issue, on "The American Country Estate," are of interest as showing the American view of the situation at present. The article is by Mr. Herbert Croly :—

"The 'palatial' period of American domestic architecture is already on the wane. The newer houses, while they still proclaim loudly their owner's opulence, indicate the influence of better ideas of propriety, architectural and social: and it may be confidently expected that the future movement will run in the same direction.

While, however, the 'palatial' house is losing some of its noisier improprieties, it is not the houses of the very rich, which constitute the best contemporary achievement of American domestic architecture or its best hope for the future. These houses receive most attention, because they are most spectacular, and because their proprietors are frequently the popular American heroes of the day; but they are not intrinsically the most interesting. Their owners frequently want a good thing, and their architects are skilful; but both good intentions and skill tend to be vitiated by the fact that, whatever else the houses express, they must inevitably express superabundant wealth. Americans do everything with their wealth except to 'forget it.' The result is that there is too much of everything—too much gilt, too much furniture, too much upholstery, too much space, too many styles, and most of all, perhaps, too much ceiling. What these houses and grounds require is not a negative refinement, but a thoroughgoing simplification."

The *University Review* contains an article by Professor Reilly, of the University of Liverpool, on "The Training of Architects." The article is written *à propos* of the recent establishment of Board of Architectural Education. The article, which is a very serious and considerate one, in which no words are wasted, should be read as a whole. The following suggestion as to the value of the working out of ideal architectural schemes on a great scale we quite concur in :—

"If the Board's scheme is adopted . . . it is suggested that the student's entire work in the shape of drawings and schemes of all kinds which he has accomplished during the four years of his course, be collected and reviewed, and a certificate awarded on the strength of it. It is further laid down that such drawings must include one project on a large scale, to be completed with detail drawings, specification, and analysis. This is an excellent departure. The value to an architect of sitting down, at least once in his life, to produce some piece of grandiose planning, where expense and other worrying restrictions of actual work need not be considered, and of trying to design architecture that may have some element of the sublime in it, is difficult to over-estimate. A breadth of view wherewith to judge all subsequent work, a knowledge of the relative value of the masses of a composition as compared with their detail, and in general, the big way of looking at things which so distinguishes contemporary French work, are among the advantages to which such an exercise may lead."

We may also note the writer's suggestion as to one important but indirect effect which might follow the formation of Architectural Schools within the Universities—viz., the stimulus that might be given to scientific research into the whole field of building materials. "In the laboratories of engineering, physics and physical chemistry, which bulk so largely at the Universities, it should be possible to resolve many of the problems pertaining to such ordinary materials as Portland cement and concrete, which the architect has to face in actual work, but for which at present he has very insufficient scientific data to go upon."

In *Technics*, Mr. John B. C. Kershaw, continuing "The Theory and Practice of Steam Generation," considers the chemical aspect of the combustion process, and describes methods adopted for promoting chemical action in the furnaces and combustion chambers of steam boilers. Some of the difficulties in the way of reforms in boiler design intended to ensure and maintain perfect combustion, and therefore to prevent the production of smoke, are clearly indicated in the following passage :—"Boiler users, however, are wedded to the present type and design, and, so long as a long-suffering public allows them to produce black smoke without imposing unduly heavy penalties, they will prefer to make the smoke and pay the fines, rather than to adopt the obvious remedy. As for boiler-makers, they likewise are conservative, and stick to the design they have been making for nearly half a century. So long as they can sell their boilers, and their customers are satisfied, they are unlikely to modify or alter their design." This is a very fair statement of the case, and we should heartily welcome more stringent legislation, which would really benefit steam users and the public alike. Lieutenant H. J. Jones, in Part IV. of "Armoured Concrete," discusses the Hennebique, Kœnen and Hatt methods of calculating the amount of re-inforcement required for a concrete-steel beam. The writer points out what he terms the irrational assumptions made in the first two of these methods, but does not show very clearly that the third is more rational. The fact is that general assumptions have to be made in connexion with all formulæ for computing the proportions of concrete-steel beams, and in the present state of knowledge the most simple rules give results that are quite as reliable as the more complicated equations. The practical value of this article would have been much greater if the writer had given examples showing the application of the rules stated. The long series of articles on "The Elements of Chemical Engineering," by Dr. Grossmann, has now drifted into a description of such "chemical" apparatus as Galloway boilers, fuel economisers, gas engines, dynamos, and electric motors. So long as the author kept to a reasonable definition of the title his articles were interesting and instructive, but he is now occupying space that we should imagine might be more usefully employed. Mr. W. W. F. Pullen contributes a short article on "Chimney Draft," in which he makes clear the principles underlying the design of boiler chimneys for use with natural draught.

To the *Fortnightly Review* Mr. Frederic Harrison contributes "A Morning in the Galleries," consisting of an imaginary conversation between three persons—the writer; Sir Visto, "rather a testy amateur of the old school, who had seen all the galleries in Europe and often dined with the R.A.'s"; and Mr. Van Dyke, "one of the young lions of the New Gallery." The conversation begins over the too-celebrated "Lycidas," which Mr. Van Dyke praises with effusion, and sneers at "those old Philistines at Burlington House who rejected one of the purest masterpieces of our time." "But is it beautiful?" asks Mr. Harrison, in his innocence. "Beautiful?" was the answer, "we don't go in for beauty nowadays; we want truth, not beauty. Art has nothing to do with beauty." They were joined by Sir Visto, who sees in it only "a scraggy youth in an ungainly attitude." After some more sparring they adjourn to the Royal Academy, where we recommend the reader to follow them. There is not only a great deal that is exceedingly amusing in the article, but a great deal also of really clever and trenchant criticism on modern art.

In the *Westminster Review* "Louise M. Richter" (we know not whether Miss or Mrs.) writes a short article on "Watts and Whistler : their Antitheses and Analogies." The former are certainly more evident than the latter, nor can we see any reason in grouping the two names, except from the temptations of alliteration. The writer finds "a great attraction" in the scarecrow figure of Whistler himself, "easel in hand" (since when have painters held their easels in their hands?), in the picture called "The Artist's Studio." We agree that the portraits of his mother and Carlyle show that "much more would have been within Whistler's reach than he cared to attempt." That was just his fault; he would not take his art (or anything else) seriously, but preferred mystifying the public with eccentricities and half-finished suggestions. The mere idea of bracketing his name with that of such a great, serene, painstaking artist as Watts, shows that the writer's critical sense is entirely out of gear.

In the *National Review* Viscount Turnour, in the course of a paper headed "Some Further Impressions of Eton," speaks strongly in regard to the sanitary defects still existing in this essentially national and historic school. The first administrative reform required at Eton, he says, is that of hospital accommodation. In the old houses there is no provision for isolation in the case of infectious disease except a notice on the door of the sick boy's small room that no other boy is to enter it; not to speak of the consideration that "a small stuffy room, some eight feet square, looking in many cases on to a blank wall, is not an ideal place to nurse a boy back to health after an illness of even a trifling nature, especially in hot summer weather." And as the pulling down of all the older schoolhouses and re-building them cannot be contemplated, Lord Turnour suggests that a hospital with properly planned wards should be built, to which all boys who were seriously ill should be sent. A great deal, apparently, remains to be done also in bringing the school, or some parts of it, into even ordinary sanitary conditions :—

"A great deal still has to be done to render the older houses more inhabitable. Narrow passages, dark, sunless rooms, indifferent sanitary accommodation, and difficulty of escape from fire, even now rope ladders have been provided and bars removed from windows, are the too prominent features of many Eton houses. In one house which I am acquainted with the lavatories, whose general aspect would make a Battersea councillor shudder, are in far too close proximity to the dining-room and kitchen, while a drain from the scullery discharges its contents there into an open gutter. Destructive criticism, however, is always easier than constructive reform, and the governing body have grappled with the housing problem in quite a robust manner (for them), and are pulling down, where it is possible, old insanitary houses, and erecting palatial new buildings, actually equipped with bathrooms! It must, however, be a great many years before all the bad houses are demolished, and meanwhile parents have a right to demand that the building in which their boy is housed should be in a proper sanitary state, as nearly as possible conformable with the laws of modern hygiene."

In the *Cornhill* Mr. E. H. Pember, K.C., indulges us with "Some Personal Reminiscences of Lord Grimthorpe," who was just a personage, no doubt, to appeal to the legal and unæsthetic mind. He amusingly admits that Lord Grimthorpe "was sometimes rude." As a public man, was he ever anything else? However, our only concern with the article is in regard to the reference to the restoration work at St. Albans, as to which Mr. Pember exhibits the usual English ignorance and indifference. He is good enough to admit that "a larger gift of artistic invention would have enabled him in certain not unimportant details to do it somewhat better." It would be interesting to know what are the details which Mr. Pember thinks might have been done "somewhat better"; interesting also to know what are Mr. Pember's qualifications for expressing an opinion on an architectural design. What Mr. Pember cannot see, when he speaks of Lord Grimthorpe having carried out all the restoration himself—"alone he did it," is that it is just that which is the cause of complaint against him. Having no artistic knowledge or culture, he chose to pull about a great national monument in his own way and without asking any better advice, out of sheer obstinacy and egotism, and because he wanted to pose as an architect. But you cannot get one Englishman in a thousand to see that. The general notion is that of course if Lord Grimthorpe found the money he had a right to do as he liked—as if he had bought St. Albans!

In *Harper* Mr. W. D. Howells, in No. IV. of his "London Films" articles, gives us an interesting study of "American origins" in London, a pilgrimage to places where those who afterwards founded America had formerly lived in London, or to churches where monuments to them are to be found; an article which should be interesting to Londoners as well as to Americans.

Scribner contains an article on "Le Nôtre and his Gardens," by Miss Beatrix Jones, with illustrations by Mr. Peixotto. Little is generally known about Le Nôtre, even by those who know and admire his great works in garden architecture. It is interesting to learn from Miss Jones's article that Le Nôtre, although he was employed all his life in schemes for the display of royal and aristocratic wealth and profusion, retained always the character of a simple and unambitious gardener. When, at the age of sixty-two, Louis XIV. created him a Chevalier of the Order of St. Michael, and suggested that he should adopt a coat of arms, he replied that he had one ready made—"three snails surrounding a spade and surmounted by a cabbage-leaf." He worked in the Tuileries gardens under his father till he was thirty-nine, and then first

made his reputation by laying out Vaux-le-Vicomte for Fouquet, the Chancellor, who on the completion of the work invited the King to a fête in order "to show his master that he was not as well housed as one of his subjects." Fouquet was too successful, the King sourly remarking that the house was more magnificent than either of his palaces of Fontainebleau or St. Germain, and that it was too much for a mere subject to own. Fouquet was arrested and his estate confiscated not many days afterwards. It is the same story as that of Wolsey and Hampton Court, only that when Henry VIII. made a similar criticism on Hampton Court, Wolsey had the tact to reply that he had only carried out the palace to have the opportunity of presenting it to the King. Several illustrations of Vaux-le-Vicomte are given, as well as others of the better known work at Versailles and elsewhere. In referring to Chantilly reference should have been made to Le Nôtre's grand flight of stone steps, perhaps the finest bit of effect there.

In the *Century* Mr. Whiteing continues his article on "The Châteaux of Touraine," with some fine illustrations of Chambord, Chaumont, and Azay-le-Rideau. An article on "The Secession Movement in German Art," by Mr. Albert Kinross, is of some interest as a sketch of recent developments in German art. The "secession" was from the academical influence towards freedom and nature. In Germany "the academies are dead," says Mr. Kinross, and it may very likely be so, but it is so much the fashion at present to rail against all academies of art that one must not accept the statement too readily. Among the most important of the secessionists was Menzel, a painter we have always thought much over-rated; it seems to have become the fashion everywhere to praise him extravagantly; but he was really a very remarkable executant entirely destitute of poetic feeling. This was not the case apparently with Böcklin, another prominent artist of the secession; his picture of "The Island of the Dead," of which a plate is given, is a very remarkable piece of romantic conception.

In the *Nineteenth Century* Mr. St. Clair Baddeley writes an article upon a curious and out-of-the-way subject—"The Sacred Trees of Rome." None of these survive of course to the present day, and their precise sites are apparently only traditional; but the subject touches on the boundaries of many interesting questions of ancient superstition. Why, for instance, were the shorn tresses of the vestal virgin hung on the sacred lotus-tree? The article suggests many other questions, and is well worth reading.

In the *Antiquary* the Rev. J. B. McGovern concludes his paper on the always interesting subject of "The Round Towers of Ireland," in reference to which title, by the way, he notices the mistaken view that these towers are altogether peculiar to Ireland; mentioning the two in Scotland, at Abernethy and Brechin, the latter of which at once suggests the Irish towers. Still, they are no doubt incomparably more numerous in Ireland than in Great Britain. Mr. McGovern offers no certain conclusion of his own as to the original use of the towers, but he gives a very useful summary of opinions and possibilities, and perhaps has the advantage over some other writers in not pretending to any positive conclusion, rebuking one adventurous person who says "*we now know* that the round towers were belfries attached to Christian churches" with the remark that we "know" nothing except that the towers were *used* as belfries by early Irish Christians: but whether that was their first use and object is another matter altogether. Our own persuasion (we cannot say conviction, for we have none) is that in their origin the towers were places of retreat and defence, even as towers were in the early times of modern Italy. Miss Escombe contributes to the same issue an article on the small church of All Saints, Compton.

An article in the *Pall Mall Magazine* gives a sketch of artistic Bohemia under the title "Studio Land in Paris."

FACTORY, BELFAST.—A new factory has been erected in the vicinity of Dublin-road and Hardcastle-street, Belfast, for Messrs. T. Somerset & Co. Messrs. J. & R. Thompson were the contractors for the work, the architect being Mr. J. W. Roome.

THE ARCHITECTURAL ASSOCIATION PRIZE DRAWINGS.

THE most successful all-round work shown at the annual exhibition of the Architectural Association students' drawings this year is that by Mr. Alick Horsnell. Mr. Horsnell seems to be the sole competitor for the Association travelling studentship, a circumstance which is to be regretted. It is dull for the Association and also for the competitor. The work shown, however, is a model of what a student should set himself to do. In our opinion, the requirements for the travelling studentship are admirable. They call for all-round development. Success in obtaining the prize does not imply that the winner is a good designer or a good draughtsman only, but that he has shown capability as a student of architecture. Architecture, as every architect knows, comprises many activities and knowledge in many departments of life besides drawing and design. It is, therefore, essential that a student should approach his work in a catholic spirit and be thorough in every branch of it as opportunity arises. Mr. Horsnell has measured old buildings, both Gothic and classic, with carefulness and some success. Not only are the drawings of the objects measured good drawings in themselves, but they have served the good purpose of initiating the student into right principles of design. It cannot be too often insisted upon that the right study of old work is the bed-rock of design. Here and there the walls of the exhibition-room are marred by the designs of those students who think they know better, who make the mistake of fancying that the study of other people's work is a form of cribbing, and that what is effective at the present day is originality. Originality must be based upon a firm foundation. It is, in fact, necessary to know what other people know about building before giving attention to being original. Mr. Horsnell's designs comprise a grammar school and a police-station. In subjects such as these there is no limit to imaginative scope, but the imagination should be put into the plan, not the elevation. The possibilities and combinations that reveal themselves in planning are a revelation to the student who faces the problem in earnest, and with a properly-arranged plan the elevations solve themselves with little difficulty. Mr. Horsnell's one weakness, which will give him ever-recurring trouble if he does not master it, is drawing ornament; both the large and small scale drawings show carelessness in this respect. Some day, perhaps, the Architectural Association will be able to form classes for drawing from the life, an invaluable aid to drawing architectural ornament and in learning proportion.

The silver medal and 10 guineas is this year offered for the design for a seaside cottage hospital, with very disappointing results. No one seems to have really solved the problem or to have produced a design that one would care to see carried out. "Nero" shows the best plan, and realises that the important part of a hospital are the internal arrangement of wards, operating-room, lavatories, and staff offices, etc. Even so the kitchen and scullery, though rightly placed, are totally inadequate for the work required of them. The most astonishing design is that of "Briarmeade." "Briarmeade" has done what every student should do; he has mastered the principles of drainage. That being done, however, it is sufficient to have the drainage question at the back of your mind when planning a building; it is not desirable to lay out the lines of your drains first and plan your building around them. "Cranleigh," on the other hand, errs by giving prominence to a drainage system showing, not complete ignorance, but the most pernicious faults; in other respects this design has defects, but many merits. The Banister-Fletcher Bursary attracts one competitor; Mr. P. Herbert Keys sends a fine set of drawings in six strainers of Morden College, Blackheath. The details are very carefully shown; when, as in this case, they are treated as working detail drawings, it is better not to repeat contours of mouldings or balusters. It is a pity that such strong line drawings should have been coloured. If colour is desired, it is best to use indelible waterproof brown ink for lining-in with.

A good deal of interest attaches to the exhibition of class designs, which show much good work, and promise well for the future.

ARCHÆOLOGICAL DISCOVERIES.

DORCHESTER.—A Roman mosaic floor has just been discovered at Dorchester. During the past few years several finds of this character have been made. The latest relic of the Roman settlement at Dorchester has been found in the heart of the borough, on the site of a new school-room in Durngate-street. The floor is about 12 yds. square, and, as far as it has been disclosed, is in a perfect condition of preservation. The design is unusually elaborate, vases, serpents, leaves, etc., entering into the scheme. The tesseræ are small and of four colours in quite unusual combination—red, blue, white, and yellow. The floor is probably the best of the many that have been found in a town so rich in Roman remains.—*Times.*

DOVER.—While excavating in the Market-square at Dover for the foundation of a new building an interesting archæological discovery was made, the ruins of the east end of an ancient church being disclosed. They have been traced as part of the ancient church of St. Peter, which, in the XIIth century, was connected with the Priory of St. Martin.

FIRE PROTECTION IN LONDON.

SIR HENRY AUBREY FLETCHER'S Select Committee of the House of Commons commenced their consideration of the clauses of the London Building Acts (Amendment) Bill on Thursday of last week, the preamble of the Bill having been passed by the Committee on the preceding Tuesday.

The following is a summary of the principal clauses as amended:—

Clause 96.—On this clause, which provides that the Act shall apply to all buildings in which more than twenty persons reside, Sir Ralph Littler, K.C. (for the City Corporation), asked that the clause should be struck out entirely. He contended that clause 105 was sufficient.

Lord Robert Cecil, K.C. (for the associated land-owners), asked that "forty" should be substituted for "twenty."

After a long discussion, the Chairman said that the Committee had agreed that the figure should remain at twenty.

Ultimately, on the application of Mr. C. C. Hutchinson (for the General Storekeepers and others), the Hon. J. D. Fitzgerald (for the promoters) agreed that the clause should be amended as follows:—

(1) "Every new building (not being a dwelling-house to be occupied as such by not more than one family) in which sleeping accommodation is provided for more than twenty persons, or which may be occupied by more than twenty persons, shall be provided with such means of escape therefrom in case of fire as can reasonably be required under the circumstances of the case."

The Committee agreed to this form of wording of subsection (1).

Among the amendments to the clause which had been submitted by the County Council was a provision that the Council should have power to refuse to approve of the plans of such means of escape at any time within two months after the deposit of the plans.

Lord Robert Cecil, K.C., said that the proposed delay of two months was excessive. He asked that the Committee should limit the period to three weeks.

The Hon. J. D. Fitzgerald said that the Council did not wish to delay the approval of plans.

Mr. Freeman, K.C. (for certain bankers and mercantile houses), suggested that the period should be one month; and after considering the matter the Committee agreed to this, providing that during the recess the period should be extended to two months.

On Friday, July 7, the Committee considered the question of appeal under clause 96, which was raised by Lord Robert Cecil, and, after a lengthy discussion, decided that no appeal should be granted under this clause.

On clause 97, which provides that "From and after the first day of January, 1907, the owner of any existing building which is, etc., etc., . . . shall, within six weeks after being required in writing by the Council so

to do, deposit at the County Hall plans showing the extent and height of such building in its several parts and the means of escape therefrom in case of fire, etc.," Mr. H. H. Collins (District Surveyor for the Eastern Division of the City of London) was called. He said that, in his opinion, the clause was much too elastic. It imposed a far more onerous obligation than the sending in of plans for new structures.

After further discussion, the Committee agreed to the clause.

The question of the number of persons provided for in clause 96 again came up, Lord Robert Cecil suggesting that "two families" should be substituted for "one family."

The Committee rejected the amendment.

Mr. Pembroke Stephens, K.C. (for the Royal Institute of British Architects), asked that the clause should be limited to the floors above the ground floor, and offered to call evidence.

The Chairman of the Committee intimated that they did not wish to hear any evidence, and the matter was allowed to drop.

The Committee then considered an amendment moved by Mr. Talbot, to the effect that industrial dwellings should be exempted from the operations of the clause, and ultimately refused to grant any such exemption.

On Monday last the question of whether there should be a single arbitrator or whether the existing Tribunal of Appeal should be retained was considered by the Committee.

Mr. Freeman, K.C. (for the bankers, etc.), said that one of the reasons why his clients so strongly desired to have the Tribunal of Appeal instead of a varying arbitrator was that they might have continuity of decision. The questions which came before the Tribunal of Appeal were of the most important character, and in the tribunal they had this distinct advantage: they had three distinct trained minds; they had an experienced architect, an experienced surveyor, and an experienced barrister. Speaking from the landowners' point of view, the tribunal had been a very satisfactory tribunal, indeed, and they were perfectly content that the machinery which had worked so well since 1894 should be applied to the present Act.

Lord Robert Cecil said that he concurred in everything that his friend Mr. Freeman had said. There was one aspect of the case that appeared to him to be of importance. If they had a regularly established tribunal, always capable of being got at, there would be a considerable increase in the speed of the decisions.

Mr. Castle, K.C. (for the district surveyors), supported the claim for the tribunal, and

Mr. Lewis Coward, K.C. (for the City companies), also supported the retention of that authority.

Mr. Moon (for the Surveyors' Institution) observed that if arbitrators were appointed it would be found that there would be a great divergence of opinion. A court always controlled proceedings better than a single arbitrator.

Mr. Pembroke Stephens (for the Royal Institute of British Architects), said that he thought that there had been a little misconception about the tribunal. An idea seemed to have got about that the Secretary of State had said, or implied, something like dissatisfaction with the tribunal; but this was a mistake. The Secretary of State had said that he was not prepared to undertake the duty of fixing the fees of the arbitrator, and thought that a scale of fees should be provided in the Act itself; and the Secretary of State had further said that the proposal to submit differences to the decision of a single arbitrator appeared to be a better mode of procedure than that laid down in the Factory Act, which empowered each party to appoint its own arbitrator, and in cases of difference an umpire in addition. "The method has been found in working to be somewhat cumbrous and expensive," said the Report of the Secretary of State. Learned counsel pointed out that that was only a comparison of the present proposal with the machinery of the Act of 1901; not a word was said about the tribunal of 1894.

The Hon. J. D. Fitzgerald then addressed the Committee on behalf of the London County Council. He said that the Council was not asking the Committee to reverse the decision of 1894. The question was not decided in 1894, and therefore came up now entirely on its merits. By the Act of 1894, the tribunal, which had come into existence under a previous Act, was re-modelled, but by no means all the questions arising under the Act were submitted to it. Dangerous structures were referred to arbitration. He asked the Committee to consider the nature of the tribunal, and how the three gentlemen who constituted it had all to attend on the same day. Further, it was impossible in a tribunal of that kind, in which two members were surveyors or architects in actual practice, that they should not have in their actual practice to deal with the very questions which arose before them as judges afterwards, and it was very unsatisfactory that persons who were advising their clients one day should be sitting as judges the next day to decide the very same point.

The Chairman: That does not necessarily follow.

Mr. Fitzgerald: It does not necessarily follow, but it follows probably.

Mr. Batty Langley (a member of the Committee): Would not the arbitrator be in the same position? He would be a professional man.

Mr. Fitzgerald: You would have the whole of England to choose from, and it is perfectly well known that there are surveyors of the highest eminence who do not practice in London.

Continuing, counsel said that he desired to avoid anything like a personal question, but it so happened that one of the existing members of the Tribunal of Appeal was the surveyor to one of the petitioners against the Bill—the surveyor to the Goldsmiths' Company.

Mr. Lewis Coward, K.C., protested that this was an attack upon the City companies, but

Mr. Fitzgerald said that it was nothing of the kind. All he intended to show was that when two gentlemen who were in considerable practice in London were appointed on the tribunal such a case as he had mentioned could not be avoided.

After hearing Mr. Moon for the Surveyors' Institution,

The Committee decided in favour of the tribunal of three, and, in reply to the Chairman, Mr. Fitzgerald said that he should like to think over the question of whether the Council would retain the existing tribunal.

Having consulted with his clients, learned counsel said that it had been proposed to have a special tribunal appointed by the Secretary of State.

After some discussion between the various counsel,

The Chairman said that the Committee decided that the tribunal was to be the same as now exists.

Clause 97a (1) was then agreed to:—"Where any building which is used or adapted to be used as a shop projects for a distance of 7 ft. or more beyond the main front side or rear of any building of which it forms part, and in which any persons are employed or sleep, the projecting portion of such shop shall be provided with a roof constructed of fire-resisting materials no less than 5 in. thick, and such reasonable means of escape as the Council may require shall be provided for such building."

On the question of the skylights, etc., in such roofs, it was agreed that fireproof glass should come under the schedule, and the words limiting the extent of such skylights to one-tenth of the whole roof were struck out.

On Tuesday the Committee decided to adopt an amendment submitted by the London County Council to clause 97a, so that subsection 5 should read:—"The provisions of this section shall extend and apply as well to existing as to new buildings."

Clause 105 was then agreed to:—"(1)—(a) Every existing building other than a dwelling-house occupied as such by not more than two families and (b) every new building shall, if having more than two stories above the ground story or if exceeding 30 ft. in height, be provided (unless and except so far as the Council otherwise allow) with either—

(a) A dormer window or a door opening in a suitable position approved by the district surveyor on to the roof with proper access thereto; or

(b) A trap-door covered with copper or zinc, and hung on hinges so as to admit of the same opening to the fullest extent, and furnished with a counter-weight so as to ensure that the same shall open automatically when unfastened, and also with a fixed or hinged step-ladder leading to the roof; or

(c) Other proper means of access to the roof, and with a sufficient parapet or guard-rail where necessary to prevent persons slipping off the roof. Any dormer window or trap-door provided under this subsection shall only be fastened in such a manner as to ensure access to the roof being always readily available from the inside of the building."

The clause also contains provision that the district surveyor shall serve notice requiring conformity with the provisions of the section.

THE BRITISH ASSOCIATION OF WATERWORKS ENGINEERS.

A CONGRESS of the British Association of Waterworks Engineers was opened at Hastings on the 29th ult., when about 200 members and friends assembled at the Town Hall. The Mayor, in welcoming the visitors, thanked the Association for having selected Hastings for their annual meeting.

Mr. F. J. Bancroft, B.Sc., the retiring President, then congratulated Mr. P. H. Palmer, Borough and Water Engineer, Hastings, upon his election as President of the Association for the ensuing year.

Mr. Palmer then took possession of the chair and proposed a vote of thanks to the retiring President. This was unanimously carried, and, after formal business had been transacted, the newly-elected President gave his inaugural address. In this Mr. Palmer treated a variety of subjects. He spoke of the desirability of frequent analysis of water supplied to the public, of filtration, the study of geology, the unsatisfactory state of the law relating to underground water, the immense waste of water in almost every town, the installation of waste meters, the sale of water by measure, etc. In Hastings, he said, waste meters had been installed and frequent and thorough inspections of fittings made, with the result that the consumption was not more than 20 gals. per head of the population for all purposes. A return given by Mr. T. Duncanson, C.E., in 1894, gave the consumption of a few large towns as follows:—Bradford, 38.40 gals. per head; Winchester, 24; Birmingham, 26; Glasgow, 52; St. Helens, 36.41; Swansea, 27; Liverpool, 27; and London, 31.—The President having been thanked for his address, the company adjourned to the Albany Hotel, where they were entertained by the Mayor to lunch.

The meeting at the Town Hall was resumed at 3.30. The subject of the first paper was "The Relationship between Capital, Working Expenses, Revenue, etc., of Waterworks Undertakings," by Mr. G. O. H. Klopp, of London. The paper consisted of a number of ideas as to the rating of premises for water, and the suggestion that all premises, houses, shops, etc., should be supplied by meter. Upon this there was a keen discussion. It was pointed out that if certain classes had to pay for their water the sanitary condition would get into a rather hopeless state. If such a system were adopted small rated houses would have to pay double, treble, and, in some cases, quadruple for their water compared with what they pay now, or, in other words, highly-rated property paid at the rate of considerably more than they used, and they had to pay for the poorer property.

The next paper read was "Extensions at the Wallasey Waterworks," written by Mr. J. H. Crowther, and read by the Secretary. It dealt principally with a description of the works. The third paper was by Mr. E. Devonshire, A.M.Inst.C.E., on "Steel and Concrete Construction at the Antwerp Works." In the evening Mr. H. F. Cheshire (Borough Analyst) gave a lecture, with numerous experiments, on "Oxidation and Corrosion." Mr. Palmer was in the chair, and mentioned that this subject was of particular interest in Hastings, where they were greatly troubled with corrosion. The iron in the water of the borough corroded and rotted the iron pipes as quickly

as any water, and they consequently had a great deal of trouble with the pipes.

On the second day of the Congress, Mr. E. Devonshire, A.M.Inst.C.E., of London, read a paper giving an elaborate description of the construction of a covered reservoir recently completed by the Antwerp Waterworks Company at their new pumping station at Laythagen, which cost 4,476*l*. The water capacity of the reservoir, including the culvert, was slightly over 7,600 cubic metres or 1,672,000 gals. The cost, therefore, worked out at 2*l*. 15s. 9d. per 1,000 gals. capacity. The reservoir was commenced on May 15th, 1904, and finished six months later.

An interesting discussion followed. Mr. Matthews, of Southampton, thought the main points in the paper were the extraordinary lightness of construction, and the marvellous cheapness of the reservoir. He could not call to mind any reservoir which had been built at such a low figure, and in so short a time, holding as it did about a million and a half gallons of water.

The Secretary (Mr. Percy Griffith) and others wanted to know how far the low price was governed by the method of construction, and how far by the cost of labour in Belgium as compared with this country.

One speaker took up the cudgels for the profession, asserting that this should not go out to the world as a typical price for a reservoir of this kind. All the conditions in Belgium were so different.

The author of the paper admitted that the low price of this reservoir was considerably governed by the labour in Belgium — the foreign labour. With English trades unions they could not get concrete renderings at anything like the price quoted by the Belgium contractor.

At the conclusion, Mr. Sainty, of Windsor, moved a vote of thanks to the Mayor and Corporation. They were also greatly indebted to the Corporation for the use of the Town Hall.

Mr. Stilgoe, of Dover, seconded, and the motion was carried unanimously. Similar compliments were paid to the President for his arrangements for the reception and comfort of the Association, also to the authors of the papers and the officers and Council of the Association.

After luncheon the engineers visited the Filsham pumping station, the West Hill, Newgate, and Fairlight reservoirs.

The annual dinner was held at the Albany Hotel in the evening.—*Sussex Daily News.*

THE LONDON COUNTY COUNCIL.

THE usual weekly meeting of the London County Council was held on Tuesday in the County Hall, Spring-gardens, Mr. E. A. Cornwall, Chairman, presiding.

Loans.—On the recommendation of the Finance Committee, it was agreed to lend Battersea Borough Council 8,830*l*. for electric light installation; Bermondsey Borough Council 6,796*l*. for electric light installation; Camberwell Borough Council 1,156*l*. for street improvements; Finsbury Borough Council 2,836*l*. for street improvements; and Lewisham Borough Council 2,500*l*. for purchase of land for depôt.

Claybury Asylum: Hot-water System.—The Asylums Committee recommended:—

"(*a*) That the estimate of 5,100*l*. submitted by the Finance Committee, being the amount required in respect of the rearrangement of the system of hot water supply at the Claybury Asylum, be approved.

(*b*) That expenditure, not exceeding 5,100*l*., be authorised in respect of the rearrangement of the system of hot water supply at Claybury Asylum.

(*c*) That the expenditure of a sum not exceeding 900*l*. on maintenance account in connexion with the arrangement of the system of hot water supply at the Claybury Asylum be sanctioned."

Tramways.—Mr. Allen Baker, in reply to questions, said unfortunately there was not sufficient power available to increase the electric tram service between Brixton and Waterloo. If there was sufficient power, the committee could utilise at least an additional sixty cars.

The Council adopted a recommendation from the Highways Committee that the sum of 13,500*l*. should be expended in placing covers on 150 of the Council's electric cars. An estimate of 19,000*l*. was also adopted for the construction, for the underground conduit system of electric traction, of the tramways from the existing lines in Theobald's-road, *viâ* the tramway subway, to the Strand.

Unemployed Workmen Bill, 1905.—The Parliamentary Committee reported as follows:—

"We report that, at the request of a number of Metropolitan Borough Councils and London Boards of Guardians, and under the authority given to us by the Council on June 6 (p. 2,317), a conference was convened at the County Hall on Monday, July 3, 1905, to consider the provisions of the Unemployed Workmen Bill now before Parliament, the object being to secure uniformity of action being taken with regard to such Bill. Delegates were appointed by the Council and the City Corporation, by twenty-two of the Metropolitan Borough Councils, and by twenty-eight of the Boards of Guardians to attend the conference, and of these fifty-two authorities, forty-nine were represented at the meeting.

The resolutions which were passed at the conference are as follows:—

(1) That this conference is of opinion that, whilst legislation on the subject of the unemployed is urgently needed and should place the cost on national and not on local funds, it is desirable that the Unemployed Workmen Bill, 1905, should be substantially amended.

(2) That this conference is of opinion that the Unemployed Workmen Bill, 1905, should be made compulsory throughout the country, as well as in London.

(3) That this conference objects to the provisions of the Unemployed Workmen Bill, 1905, in so far as they create thirty additional authorities in London, thus adding to the existing complications of local administration in the metropolis, and in so far also as they confer a power of rating, although limited, upon an indirectly elected authority.

(4) That the words 'farm colonies' be omitted from the Bill, and that the words 'labour colonies' be substituted therefor, and other consequential alterations made in the Bill.

(5) That a copy of the resolutions passed at this conference be sent to the Prime Minister and the President of the Local Government Board, and that this conference do now adjourn.

(6) That the figures of the voting be also sent to the Prime Minister and others to whom the resolutions are sent.

The authorities concerned have been informed that the decisions at which the conference arrived have been communicated to the Prime Minister and the President of the Local Government Board."

London Building Acts (Amendment) Bill, 1905; *City of London (Means of Escape from Fire) Bill*, 1905.—The same committee reported:—

"We report that the Select Committee of the House of Commons, presided over by Sir Henry Aubrey-Fletcher, Bart., has, after an inquiry extending over fourteen days, found the preamble of the City Bill not proved, and the preamble of the Council's Bill proved so far as it relates to means of escape from fire.

The decision will entail the omission from the Bill of clauses 101 (separation of buildings with fire-resisting materials); 103 (prohibiting cavities being left between boarding and panelling and walls); 104 (as to the construction of lift shafts); and 106 (providing for the prevention or spread of fire in connexion with windows and openings). The committee is now sitting to consider the amendments to the remaining clauses of the Bill proposed by the Council and by the opponents."

The Avenue Theatre.—On the recommendation of the Theatres and Music Halls Committee plans, submitted by Messrs. Blow & Billerey, showing a proposal to reconstruct the auditorium at the Avenue Theatre, were agreed to.

The Council, having transacted other business, adjourned.

APPLICATIONS UNDER THE 1894 BUILDING ACT.

THE London County Council at their meeting on Tuesday dealt with the following applications under the London Building Act, 1894. The names of applicants are given between parentheses:—

Clapham.—A two-story building on land at the rear of Nos. 20, 22, 24, and 26, St. John's-road, Battersea, with external walls at less than the prescribed distance from the centre of a roadway leading out of the south side of St. John's-hill (Mr. E. S. Barr for Messrs. Hillier & Parker).—Consent.

Lewisham.—That an order be issued to Messrs. Owen & Ward, sanctioning the formation or laying out of a new street for foot traffic only, to lead out of the east side of High-street, Lewisham, to the north side of Limes-grove (for Mr. W. Stephens).—Consent.

Hackney, North.—Buildings on a site on the north side of Manor-road, Stoke Newington, between No. 4 and the Great Eastern Railway (Messrs. Turner & Holditch for Mr. F. Matthews).—Consent.

Lines of Frontage and Projections.

Lewisham.—One-story shops upon part of the forecourts of Nos. 5, 7, 21, 23, and 25, Rusheygreen, Catford (Mr. A. L. Guy for Mr. C. Atkins and Mrs. Duffin).—Consent.

Finsbury, Central.—Buildings at Nos. 2 to 5, and Nos. 12 to 29 (inclusive), White Lion-street, Pentonville (Mr. T. H. Watson for Captain F. T. Penton).—Consent.

Marylebone, East.—The retention of an iron and glass shelter over the entrance to the Wharncliffe Rooms, Hotel Great Central, on the east side of Harewood-avenue, Marylebone-road, St. Marylebone (Messrs. J. W. Singer & Sons, Limited, for the Fredericks Hotels, Limited).—Consent.

Paddington, South.†—The retention of a projecting pent roof at No. 2, Frederick-mews, Connaught-square, Paddington (Messrs. F. Kidner & Son).—Refused.

Wandsworth.—A house on the western side of Braxted-park, Wandsworth, to abut also upon the northern side of Baldry-gardens (Mr. F. E. Boulting).—Refused.

Width of Way.

Hampstead.—Retention of an iron fire-escape staircase at the Hampstead Hospital, Haverstock-hill, Hampstead (Messrs. Young & Hall for the council of the hospital).—Consent.

Width of Way and Frontage.

St. Pancras, North.—That the application of Mr. G. H. Greatback, for an extension of the period within which the erection of a building upon the site of Nos. 9, 11, 13, 15, and 17, Highgate-road, St. Pancras, to abut also upon Greenwood-place, was required to be commenced, be granted.—Consent.

Hackney, North.†—Five houses with bay windows on the northern side of Harrington-hill, Hackney, to abut also upon Ivy-terrace (Mr. W. Stone for Mr. J. L. Siggens).—Refused.

Width of Way, Line of Frontage, and Space at the Rear.

Kennington.—A workshop on the northern side of Richmond-terrace, Clapham-road, Kennington, westward of No. 90, Clapham-road, (Messrs. J. A. J. Woodward & Sons for Mr. C. Blatchford).—Refused.

Width of Way, Line of Frontage, and Construction.

City of London.—An iron, brick, and concrete gangway connecting the second floors of the premises of the *Standard* newspaper on the east and west sides of Shoe-lane, City (Messrs. Young & Hall for the proprietors of the *Standard* newspaper).—Consent.

Formation of Streets, etc.

Bethnal Green, South-West.—That an order be issued to Mr. A. P. Stokes refusing to sanction the adaptation of a street for foot traffic only of a way known as "Reuben-street" out of the east side of Brady-street, Bethnal-green, the formation of a street for foot traffic only out of the south side of such "Reuben-street," and the erection of buildings at No. 108, Brady-street (for Mrs. E. Seward and Mr. R. W. Seward).—Refused.

Space at Rear.

Strand.—A modification of the provisions of section 41 of the Act, with regard to open spaces about buildings, so far as relates to the proposed erection of an addition to the Café Monico, Piccadilly-circus (Mr. W. J. Kemp for Messrs. G. & B. Monico).—Consent.

Working Class Dwellings.

Norwood.—A deviation from the plans approved for the erection of blocks of working class dwellings on a site on the western side of Brixton-hill, Norwood, northward of No. 176, so far as relates to the position of the three rear blocks (Mr. R. Robertson for the Housing of the Working Classes Committee).—Consent.

Means of Escape From the Top of High Buildings.

Paddington, South.—That Mr. B. S. Jacobs be informed that the Council has considered the drawings submitted by him on behalf of Messrs. Lewis & Co., showing the means of escape in case of fire, proposed to be provided in pursuance of section 63 of the Act, on the seventh (top) and sixth stories of Block C, Moscow-court, Moscow-road, Bayswater.—Consent.

Alterations to Buildings and Means of Escape at Top of High Buildings.

City.—Uniting Nos. 18 and 20, Bishopsgate-street Within by an opening at the first floor level (Mr. C. J. Jones for the Bank of Scotland).—Consent.

The recommendations marked † are contrary to the views of the local authority.

RESTORATION OF THE CHURCH, MARTINSTOWN, DORSETSHIRE.—It is proposed to carry out some necessary works of repair at this church. Mr. C. E. Ponting, F.S.A., of Marlborough, the Diocesan Architect, has, at the request of the Building Committee, made a thorough examination of the church, and he reports that there is a good waggon roof under the present dilapidated plaster ceiling, and it is hoped that sufficient funds will be raised to open up this roof and to recover the outside, which is in a very bad state of repair. The north aisle is in a dangerous condition, as the wall is 13 in. out of the perpendicular, and the foundations are very unsafe. The beams of the roof in this aisle are in many places without any support, and the pillars of the colonnade are out of the true. These dilapidations require immediate attention. The whole of the roof will have to be recovered, and the north aisle will require to be under-pinned.—*Dorset County Chronicle.*

ARCHITECTURAL SOCIETIES.

MANCHESTER SOCIETY OF ARCHITECTS.—On Saturday, July 1, the members of the Manchester Society of Architects visited two recently-built houses at Knutsford. Bexton Croft, for Mr. D. Macpherson (Mr. M. H. Baillie Scott, architect), is a simply-designed house, built with a keen appreciation of the value of the picturesque. The external grouping is very delightful, particularly the entrance front as seen from the road, and the garden is nicely treated. Internally one occasionally feels a little doubt whether the "quaintness" is not too insistent; but the general charm of effect overcomes the doubt. Woodgarth, for Mr. George Wragge (Messrs. Thos. and Percy Worthington, architects), has great architectural charm, and possesses a quiet quality of picturesqueness which is very pleasing. The happiest bit of grouping is the garden front, close to the edge of an old sand-pit, containing a tennis lawn and a circular pergola. Internally the general restraint adds to the decorative value of the coloured modelled plaster, tiles, and metal-work. Afterwards some sketches were made of Bexton Hall, a simple old red-brick farm-house, with a certain stateliness in its symmetrical front crowned by a large octagonal lantern, and approached through an enclosed forecourt. The Society has also made an evening visit to Oldham to see additions to two houses for Mr. William and Mr. James Dronsfield (Mr. J. Henry Sellers, architect). In their breadth of effect and refinement of detail these are very successful. The gate-piers to one house seemed to be a natural outcome of the site in their sturdy massiveness, while internally in both houses there was much interesting design in marble mantel-pieces and wood inlay to furniture and flooring.

EDINBURGH ARCHITECTURAL ASSOCIATION.—The annual excursion of this Association took place on Saturday last week, when a party of members and friends travelled by saloon carriage to Dunkeld. After being served with lunch at the Birnam Hotel, the party proceeded to Dunkeld Cathedral, where the Chapter House was visited by special permission of the Duke of Atholl, and under the leadership of Mr. Charles M'Laren. The members were then driven to Murthly Castle, permission having been granted by Mr. Steuart Fotheringham. In the absence of the factor, Mr. W. A. Rae, the architect on the estate, Mr. Duncan, acted as leader. After looking at the new castle, an unfinished Jacobean edifice of great size, a walk through the gardens took the party to the old castle and the St. Anthony's Chapel. After leaving Murthly the drive was continued to Stobhall, which was visited by permission of Lord Ancaster. Mr. George T. Ewing, architect, acted as leader over this group of buildings, which consist of castle, chapel, priest's house, and dowery house. The members were entertained in the dowery house, and then walked down the banks of the Tay, past the Linn of Campsie, across the ferry, and thence to Stanley Railway-station, where train was taken to Perth. On arrival at Perth dinner was served at the Station Hotel. Mr. Harold O. Tarbolton, the President, occupied the chair, and at the conclusion of the dinner proposed votes of thanks to those who had contributed to the day's enjoyment by granting permission to visit, or acting as leaders. Mr. Colin B. Cownie, hon. secretary, was also thanked for the satisfactory nature of the arrangements which he had made for the excursion.

DEVON AND EXETER ARCHITECTURAL SOCIETY.—On Saturday last week members of the Devon and Exeter Architectural Society visited the new Britannia Royal Naval College at Dartmouth. On arrival the party was entertained at luncheon at the Castle Hotel by the architect of the building, Sir Aston Webb. The loyal toast having been honoured, the President (Mr. B. Priestley Shires), in proposing the toast of "Our Host," said many remembered the pleasant time nearly two years ago they spent with Sir Aston Webb in inspecting one of his interesting works. Sir Aston Webb was then kind enough to say he would be pleased to show the members over the works in their more completed form. That promise had never been lost sight of by them, and that day it was their privilege to visit the college a second time. One and all were delighted to hear that the honour of knighthood had been conferred on him, and that he had also been presented with the Royal Gold Medal for 1905, given by King Edward VII., upon the recommendation of the Royal Institute of British Architects.—Sir Aston Webb, in response, said it gave him great pleasure to be able to redeem his promise to show the members over the college a second time. He felt it to be a good thing to have the friendly criticism of his brother architects on his work.—The party then proceeded to the college, which was inspected under the guidance of Sir Aston Webb, who pointed out the main features and details of his work, now nearing completion. The building is situated on an eminence overlooking the harbour. It is about 800 ft. long, and has in the centre a large hall for the assembling of the cadets, with classrooms on each side, in which they will carry on their various studies. At one end of the building is the chapel, and at the other the large dining-hall. The hospital is separated from the main college, with doctor's residence, and there is also an open swimming bath, workshops, etc. After the inspection the members were entertained at tea by Sir Aston Webb in the large dining-hall of the college. At the conclusion the President (Mr. B. Priestley Shires) accorded Sir Aston Webb a very cordial vote of thanks. The members then dispersed.

Books.

The Annual of the British School at Athens. No. X. Session 1903-1904. London: Macmillan & Co.

THE splendid work carried out by the British School at Athens during the 1903-04 session is summarised in the very interesting Annual before us. Founded in 1886 to give British students of Greek archæology and art "the opportunity of pursuing their researches in Greek itself, with command of the means which the recent great advances of the science have rendered indispensable," the school has met with the success which it deserved. As its prospectus observes, "Athens is now an archæological centre of the first rank. The architecture of Greece can nowhere else be studied to such advantage." With the command of an adequate library and "the advice of a trained archæologist residing on the spot," it might well be expected that discoveries, both numerous and important, would be made, and the present Annual, with its essays and illustrations, is clear proof that such is indeed the case. Moreover, the work done is by no means confined to the environs of Athens, more than one paper in the volume before us treating of discoveries in Crete.

Some sixty pages are taken up by Dr. A. J. Evans's account of the excavations at Knossos. "The fifth campaign on the palace site of Knossos," he says, "had a two-fold object:—(1) the continued exploration of the palace itself; (2) the further investigation of dependencies lying beyond what may be called the inner *enceinte*." It was found necessary to carry the excavations to a depth in some places of about 14 metres. The great interest of the palace lies in the fact of there being remains of more than one structure on the same spot. A "later palace" was superimposed upon the ruins of earlier buildings, and as a result of the work of Dr. Evans and his colleagues there appear to be "five distinct phases of culture that separated the initial stage of the later palace from the latest neolithic deposit." In addition to work in the palace itself, a "Minoan" roadway paved with fine slabs has been traced running westwards . . . for a distance of over 230 metres." As the pavement lay at a depth of about 20 ft. below the surface, it will be understood what difficulties Dr. Evans and his workers had to overcome. The discovery of a Minoan cemetery and royal tomb must also be laid to Dr. Evans's credit. In the palace itself a quantity of fragments representing the artistic and architectural work of several periods have been unearthed; fragments of painted stucco, *pithoi* or jars, some "knobbed," some painted, pieces of miniature frescoes, clay sealings, all have been found. Dr. Evans, moreover, sees a religious element in most of the wall decorations, and, from the very varying character of the remains and the position in which they were discovered, has been enabled to sketch a rough history of the different palaces. His essay, with the accompanying diagrams and illustrations, makes very interesting reading.

Mr. Tod contributes notes on a series of inscriptions recording "the victories won by teams of Spartan ball-players." We are told that "the competitors took part, not as individuals, but as representatives of divisions of the Spartan State." These contests took place annually, and were no doubt regarded with that interest which is accorded at the present time in England to our modern athletic pastimes.

Grotesques and their probable charms against the evil eye are considered in a paper by Mr. Wace, who contributed some interesting information on the same subject in last year's annual. Some of these grotesques are in bronze, others in terra-cotta, and the nature of their origin is somewhat obscure. Some came from Egypt, some from Asia Minor, others from South Russia, Greece proper, and Italy. The terra-cotta figures are superior in artistic qualities to the bronzes. It seems reasonable, in view of certain of their characteristics, to agree with Mr. Wace in thinking that the majority were used as charms. Many of these "figurines" the author would call mere caricatures. The subject of belief in the evil eye in antiquity is an interesting one, and suggests, perhaps, an explanation of certain points at present not wholly understood.

A third Eteocretan fragment, in the form of the "*Neikar* Inscription," is treated of by Mr. Conway, and this is followed by a paper in German on old Egyptian agricultural implements from the pen of Dr. Schäfer. To this latter is appended a short note on the Mystica Vannus Iacchi, by Miss Harrison of Cambridge.

Two articles on south-western Laconia, one geographical, the other dealing with the various inscriptions which have been brought to light, allow Mr. Forster to summarise briefly his work in that district. Numerous discoveries have been made in and near the town of Gytheion, and, as the author remarks, "the existing inscriptions . . . are numerous enough to show that throughout the last three centuries B.C. and the first two centuries A.D. Gytheion still retained some of the prosperity which it had enjoyed as the port of a dominant Greek State." The later histories of many Grecian towns, such as was Gytheion in its prime, are of great interest to others beside archæologists; and the most insignificant inscription is a find of value, inasmuch as it may add a link in the chain of reconstruction.

The director of the school, Mr. R. C. Bosanquet, contributes a short note on the monastery of Daou. Mr. Dawkins, who in an earlier part of the volume continues his notes from Karpathos in a discussion concerning its dialect, also writes on further excavations at Palaikastro, in Crete. The section on nomenclature makes clear a number of points which might otherwise be missed by the average reader. Here, as at Knossos, vases of the "Minoan" or Cretan bronze age, as well as geometric ware, rock-crystal cups, clay doves, and other probable appurtenances of religious ceremonies have been found. Mr. Currelly adds a note on the "larnax-burials"—troughs of clay, of which some resemble nothing so much as a modern foot-bath. Within these troughs have been found human remains.

The Annual also contains a report of the proceedings at the opening of the Penrose Memorial Library at Athens. Besides numerous illustrations, there are also included four plates, one of which is a key-plan of Palaikastro by Mr. Heaton Comyn, the holder of the architectural studentship of the school and the designer of the Penrose Library. The Annual reflects every credit on its editor.

A Handbook for Superintendents of Construction, Architects, Builders, and Building Inspectors. By H. G. RICHEY, Superintendent of Construction U.S. Public Buildings; Author of "Richey's Guide and Assistant for Carpenters and Mechanics." First Edition. Third Thousand. New York: John Wiley & Sons. London: Chapman & Hall, Ltd. 1905.

THIS book is primarily addressed to the superintendent of construction, a term which more

correctly indicates the duties of that useful functionary than the familiar designation "clerk of works." But a large proportion of its contents will be found equally useful to the architect and the builder, especially as handbooks on building construction represent a department of technical literature to which comparatively little attention has been paid in this country. We do not mean, of course, that there is any lack of excellent treatises on this subject, but rather of those compendious yet convenient-sized books—such as are published for different branches of engineering—which can be carried in the pocket or kept on the desk for daily reference. Mr. Richey appears to possess personal qualifications for the authorship of many subjects considered in his handbook, for, with the eclecticism of the American, he has been a carpenter, a contractor, and an architect, and now occupies a Government appointment as Superintendent of Construction for United States Public Buildings. Moreover, his own knowledge has been supplemented by reference to several standard works, a list of which is given immediately after the Preface. As the handbook comprises nearly 700 pages of closely-printed letterpress we cannot dwell in detail upon its contents, and further, as the material collected consists of facts rather than opinions there is not much occasion for criticism beyond a few brief comments upon the manner in which the author has realised the excellent intention of his work.

The sequence of treatment is distinctly good, and the subjects included fall naturally into three main divisions which, however, are not indicated by Mr. Richey. In the first division he deals chiefly with the foundations, shells, and floors of buildings, in the second with interior fittings, and equipment, and in the third with familiar geometrical problems, engineering formulæ, and miscellaneous data.

Part I. contains a good epitome of foundation work as practised in the United States and detailed particulars relative to building stones, but the latter are of no practical service to British readers. In Part II., the paragraphs on "Stone-cutting" and "Stone-setting" deserve special notice, so also does a paragraph on "Bricklaying," wherein the author shows that he is well acquainted with various sins of omission favoured by indifferent workmen in the United States, and, we are sorry to say, not unknown in this country. Several pages in this Part are devoted to the building regulations of American cities and are only interesting on this side of the Atlantic for purposes of comparison.

Part III. is quite a complete little treatise on lime, cement, mortar, and concrete, and the information appears to be generally up-to-date. This part also contains an excellent *résumé* of modern fire-resisting floor construction, including brief accounts of some systems of concrete-steel as applied to such work, and concludes with a summary of suggestions from various sources relative to the fire protection of buildings, among these being an extract from the address delivered by Mr. John R. Freeman to the National Board of Fire Underwriters, New York. Part IV. deals first with such matters as lathing, plastering, and carpentry, then with sheet metal work, painting, glazing, and paperhanging; next with constructional iron work in some detail, and finally with electric wiring and heating systems. This Part, like the rest of the book, has been compiled in a very conscientious manner, and, with the exception of certain local data, ought to be extremely useful to architects and building contractors. Part V., commencing with various geometrical problems occurring in connexion with architectural drawing, describes and illustrates the orders of architecture, and gives numerous mathematical and other useful tables; Part VI. being of similar character.

Being printed on thin paper, the book is by no means bulky, the type is large and clear enough to be read with perfect ease, and the numerous illustrations are, without exception, of the kind most acceptable to practical men. Taken as a whole, Mr. Richey's handbook is an excellent production and one which might well serve as a model, if some British architect could be induced to write a similar manual for the benefit of the building profession.

Houses for the Working Classes. By Sydney White Cranfield and Henry Ingle Potter, AA.R.I.B.A. Second edition, revised and enlarged. London: B. T. Batsford. 1904.

THE illustrations are the principal feature of this interesting volume. They are contained on twenty-six plates, measuring about 15 in. by 11 in., and include ground-floor and first-floor plans of fifty-two different varieties of houses, ten elevations, a bird's-eye view of some of the houses arranged in terraces, and some details. There are a few houses with a separate tenement on each floor, but nearly all the plans are of two-storied houses. The plans are arranged in groups, three in each group being on similar lines, but differing in detail. It is somewhat strange that no cellars are shown. In many towns the simple plans in group B are most commonly adopted, but the coal-place and "pantry" (or larder) are placed in the basement. In nearly every case the elevation differs from the plans to which it is supposed to refer. Thus in Plate II. the windows of two adjacent houses are grouped together, whereas, according to the plans, such an arrangement could not possibly be adopted; in Plate V. the windows in the elevation differ from the corresponding plans and two of the doors are shown in different positions; Plate VII. shows a two-storied bay, with canted sides and small windows over the doors, while the plans show a square bay of one story and no windows over the doors; in Plate XIV. the elevation shows a projecting gable, but the corresponding plans give no indication of any projection above the ground floor; and in Plate XXI. the elevation of J2 contains only one chimney-stack, although, according to the plans, three are required. These discrepancies may not be of great importance, but they are somewhat confusing, and it would have been better if they had not been allowed to appear. The plans themselves are ingenious and suggestive, and many are really excellent. In nearly every case the position of the fireplace has been carefully considered, but that in the living-room of A3 is an exception. A tabular statement is given, containing a list of the different plans, with the sizes of the principal rooms, the cubical contents, and cost per cubic foot; the authors estimate that the houses can be built by contract in the London district at prices ranging from 5½d. to 6½d. per cubic foot and "in the provinces at a considerably lower rate." The illustrations are clear and well drawn, and the volume reflects great credit on the author and publisher.

COMPETITIONS.

TECHNICAL INSTITUTE, ROCHESTER.—Mr. Frank T. Baggallay, F.R.I.B.A., of 50, Berners-street, London (nominated by the President R.I.B.A.), has been appointed assessor in this competition.

BRYNMAWR SEWERAGE SYSTEM.—At a meeting of the Brynmawr Urban District Council held on Friday last week the report on the four selected schemes for the disposal of the sewage for Brynmawr was received from the assessors (Messrs. S. H. Cowper Coles, F.S.I., and W. L. Roach, A.M.I.C.E.). On their recommendation the premium of 20*l.* was awarded to Mr. Walter J. Lomax, A.M.I.C.E., of Bolton and Westminster, for the best prepared scheme. The estimated cost of the works, including 15 per cent. for contingencies and fees, is 4,184*l.*

MITCHELL LIBRARY, GLASGOW.—The design for the new Mitchell Library, to be erected in North-street on the site belonging to the Corporation immediately adjoining St. Andrew's Halls, was selected at the meeting of the Town Council on the 6th inst. The successful competitor is Mr. W. B. Whitie, architect, 219, St. Vincent-street, whose design was placed first in order by the assessors—Mr. A. B. M'Donald, the City Engineer; Mr. John Keppie, President of the Glasgow Institute of Architects; and Mr. F. T. Barrett, the librarian. The principal frontage of the building will be to North-street, with the main entrance near to the north end. The style is Renaissance, based on English examples of the XVIIIth century. The principal reading-room will be on the ground floor. It will measure about 120 ft. by 50 ft., and will be lighted entirely from the roof.

LEYS SCHOOL, CAMBRIDGE.—Messrs. Drew-Bear, Perks, & Co. ask us to mention that the steelwork in this building, mentioned in our last, was carried out by them.

METROPOLITAN ASYLUMS BOARD.

THE usual meeting of the managers was held on Saturday, last week, at the offices, Victoria Embankment, W.C.

Millfield.—On the recommendation of the Finance Committee it was agreed that application be made to the Local Government Board for an Order authorising the managers to incur an expenditure not exceeding the sum of 2,950*l.* in connexion with the adaptation of Millfield for treatment of a special class of children.

South Eastern Hospital.—The Works Committee recommended, and it was agreed, that application be made to the Local Government Board for their sanction to the Managers inviting tenders from eight selected firms for the execution of the necessary works in connexion with the installation of electric light, telephones, fire-alarms, etc., at the South-Eastern Hospital, and to the Managers entering into a contract for the execution of such works without, in the first instance, advertising for sealed tenders.

The Hospitals Committee submitted a lengthy report dealing with an examination by Dr. Cameron into the question of return cases of scarlet fever and diphtheria, and stated that theBoard's medical superintendents had submitted important recommendations to which consideration would be given. One of the recommendations was "That at one hospital, say the South-Eastern, now in course of rebuilding, two or more wards be divided by glass partitions into separate rooms, and that scarlet fever patients be treated therein on the system of complete isolation during the whole period of detention, so far as that may be found practicable; and that the effect of this procedure on the occurrence of return cases should be carefully observed."

The Committee recommended, and it was agreed, that, subject to the approval of the Local Government Board, the proposed division of two of the new wards at the South-Eastern Hospital into separate rooms, in accordance with the scheme prepared by the architects, Messrs. T. W. Aldwinckle & Son, be approved, and that the Works Committee be requested to take the necessary steps for carrying out the work.

MASONIC HALL, BALLYMONEY, IRELAND.—The ceremony of laying the foundation stone of the Vowferry Masonic Hall was performed recently by Mr. Wm. Moore, K.C., M.P. The building has been erected from designs prepared by Mr. Albert M'Master, C.E.

INSURANCE OFFICES, LIVERPOOL.—The new offices of the State Fire Insurance Company, in Dale-street, Liverpool, have now been completed. The premises are late Gothic in style, and were designed by Mr. W. Aubrey Thomas. The furnishing was carried out by Messrs. Waring & Gillow, Ltd.

CHURCH, WHITEHEAD, BELFAST.—The new church erected at Whitehead was opened on the 9th inst. The style of the building is early XIVth century Gothic. The two main entrance doors are grouped under a deeply-recessed and moulded arch, over which rises the main gable window, with geometric stone tracery and mullions. The interior dimensions of the building are 62 ft. long by 50 ft. wide. The gallery extends over the entrance vestibule. The tower when completed will be 78 ft. above the roadway. The heating of the building is by Musgrave's small bore system, and the artificial lighting plant was erected by the Rosco Acetylene Gas Company, under the supervision of Mr. R. J. Blakely, J.P. The glazing and leaded lights were supplied by Messrs. Clokey & Co., and the gates by Mr. George Jones. Under the supervision of Messrs. J. J. Phillips & Son, architects, Belfast, the building contract was carried out by Mr. Thomas M'Millan, Belfast.

VILLAGE INSTITUTE, NEWBOROUGH.—At Newborough, Anglesea, on the 30th ult., the Prichard Jones Village Institute and Cottage Homes were formally dedicated to the public. The site of the institution is on the main road leading from Newborough to Gaerwen. Besides the institute, there are six cottages, three on each side. The principal rooms of the building are arranged on two floors. The principal entrance is in the centre of the main front, and opens directly through glazed swing doors into a hall, on the left of which is the library, with counter and public space for borrowers. Behind the library, opening out of the central hall, is the reading-room. The library is fitted up with bookcases to take 6,500 volumes. On the right of the entrance-hall is a large smokeroom, at the rear of which is another reading-room, and behind the staircase are retiring-rooms, lavatories, etc. On the first floor is the assembly-hall, committee-room, ladies' reading-room, cloakrooms, storerooms, and caretakers' living-room, with bedrooms above. The building is in the English domestic style, the ground floor story being of grey granite, with Ruabon stone dressings, the upper part finished half timber. The six cottages or almshouses are one-story high, and are erected to harmonise with the institute. Each comprises a living-room, parlour, bedroom, etc. The work has been carried out by Mr. Hugh Hughes, contractor, of Newborough, from the designs of Mr. Rowland Lloyd Jones, architect, Carnarvon.

Illustrations.

SCULPTURE: "THE FINE ARTS."

THIS is a bas-relief in bronze, by Mr. Alfred Drury, exhibited in the Lecture-room at the Royal Academy, and intended to form part of a memorial to Queen Victoria to be erected at Wellington, New Zealand.

COMPETITION DESIGN FOR WESLEYAN HALL, WESTMINSTER.

WE give this week the perspective view of Mr. W. Flockhart's fine design submitted in the second competition for the Wesleyan Hall at Westminster, with a small-scale reproduction of one of the plans as a key to the treatment of the exterior design.

The following extracts from the architect's Report will assist in explaining his intentions in the design :—

"In designing the great hall I have been very careful to observe the wish you have expressed that everyone should be able to see the speaker, and that the floor of the hall should be free from all obstacles, and I feel pretty certain that the form and dimensions I have adopted in my design (based as these are upon the harmonic proportions found to exist in halls of similar character which have proved to be acoustically satisfactory) would result in this instance in a hall in which everyone could hear well as well as see. I have also been very careful, as I believe, to ensure that all rooms, halls, corridors, and staircases would be adequately lighted and ventilated, by direct skylight or by lateral windows opening to the outer air.

From the principal entrance hall in Princes-street access is given to every portion of the building, and I think it will be found that the approaches to the various halls and rooms are abundantly adequate and easily found.

I have arranged these so that it will be possible to hold meetings in the different sections of the building simultaneously, and admission could be given to each individual section without interference with another part, and inasmuch as there are separate exits from each portion, people could leave this building freely and without meeting with any interruption from other portions or sections.

All these exits are taken direct out into the surrounding streets, and I may be excused if I call special attention to the arrangement of these exits as indicated on the plans submitted, as much time and care has been expended in arranging them in an easy and direct manner with a view to the safe and comfortable use of the building and to meet the requirements of the London County Council, whose officials I have consulted informally in this matter, and I believe I am correct in stating that no difficulty would be met with in obtaining the County Council's licence for the use of this building in the manner contemplated. . . .

With reference to warming and ventilating the building, I stated in my original report that I was rather inclined to favour a natural system as against an artificial or forced one, but, in giving this matter further consideration, and with particular reference to the large hall, I am inclined to think that no system other than that known under the name of Plenum, or some similar artificial arrangement whereby fresh air is warmed and forced into the hall under pressure, would be a satisfactory one, and I would suggest that the large hall, the smaller hall, and the tea-rooms should be so warmed and ventilated. I have shown on a plan an arrangement of fresh-air intake and warm-air ducts under the basement floor, and which will supply warmed air to the various rooms indicated to be warmed by this system. This air would be drawn from a source some height above the ground-level at the north-west corner of the building, and would be warmed by being passed over and between batteries of pipes, heated by hot-water or low-pressure steam, and forced by means of large fans into the channels or ducts under the basement floor, and communicating by flues built in the wall leading into the various sections of the building. Supplementary smaller coils would be placed at the foot of these warm-air shafts to supplement the main batteries as required. Other and separate channels or flues would be taken from the lower level of the various rooms and led up into ventilators placed in the roof at a high level of the building."

The architect gives the estimated cost of the building as 121,911*l.*; taking the tea-rooms at 9d. per cubic foot; front part of basement at 10d.; entrance hall, committee-rooms, conference-room, staircase, etc., at 1s. 6d.; reading-room, library, and small hall at 1s. 2d.; large hall at 9d., or at 10*l.* per sitting; secretaries' flat and church offices, etc., at 10d., and offices for letting purposes at 1s.

THE COTTAGE HOMES, CROYDON.

THESE Cottage Homes are to be erected for the Croydon Union on a site facing Pawson's-road, adjacent to the workhouse grounds. The buildings have been designed by Mr. Hatchard Smith, of London, who obtained the first premium in a recent competition. They will be constructed of stock bricks covered with rough-cast, having red-brick plinth. The roofs will be tiled with Reading tiles. The ground-floor rooms will have wood block flooring, the upper floors 1¼-in. deal flooring. The entrance-hall and passages will be paved with mosaic. The walls of porch, lobby, lavatories, and bath-rooms will have glazed brick dados. All joinery will be of deal, painted.

"DOG AND DOUBLET INN," AND "SOLOM'S WOOD," SURREY.

THESE two houses, shown for convenience on one sheet, are built from the designs of Mr. E. Guy Dawber. Both drawings are exhibited at the Royal Academy. The following is the architect's description of them :—

DOG AND DOUBLET INN, ETC.

These buildings are now in course of erection around the village green at Sandon. A club and gymnasium, with reading and billiard rooms, has been already built on the opposite side, and these cottages and the inn will thereby complete the formation of the green.

Local materials, oak timbering, and rough-cast, etc., are being used, and the inn will have a courtyard opening on to a garden at the back, the idea being to keep the whole group as simple and unpretentious as possible, and depend upon grouping and proportion for effect.

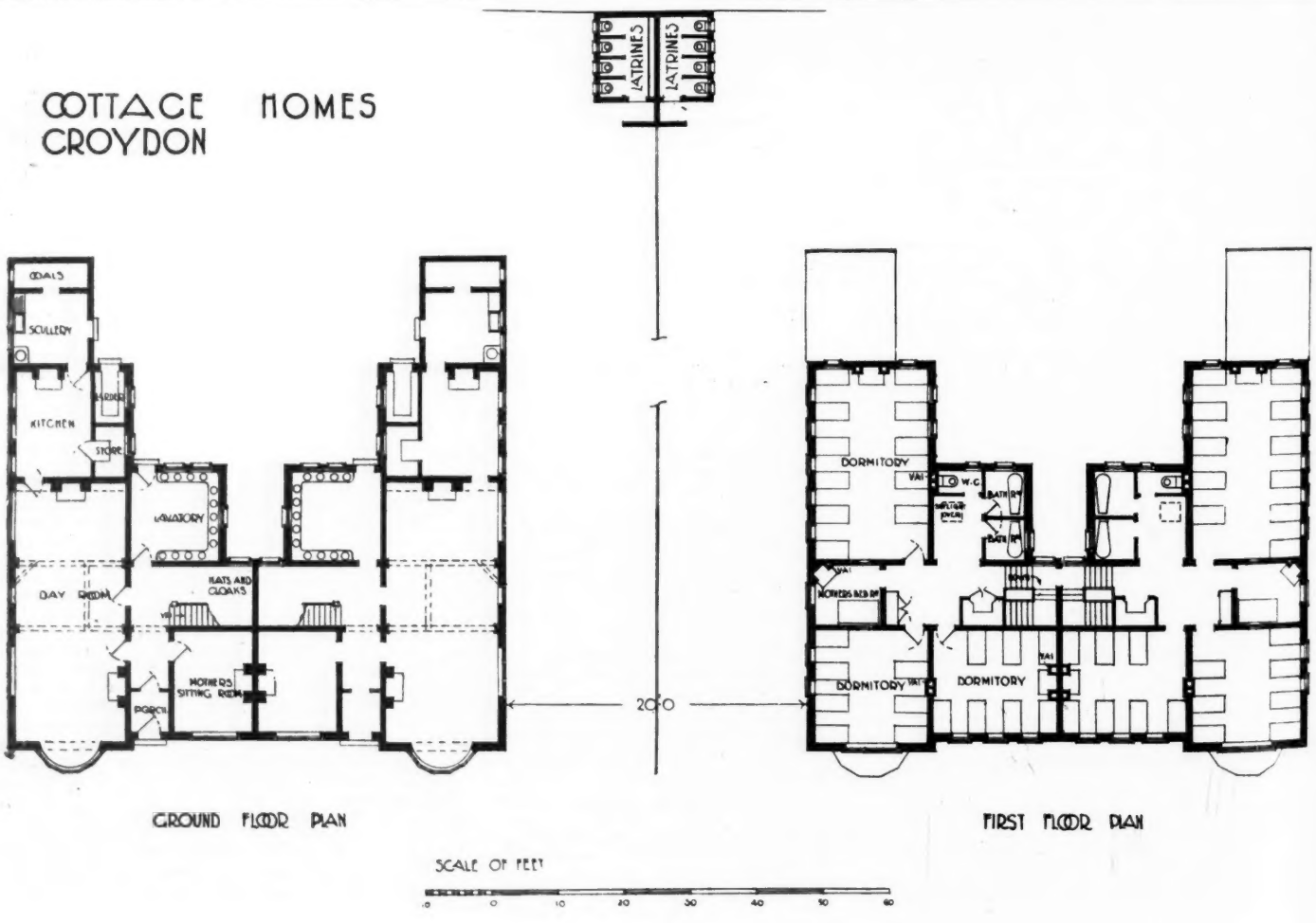
The entrance lodges to the park have been built some year or two, and are close to the cottages shown in the sketch, so that the whole will form one scheme.

The work is being carried out by the estate workmen, under the supervision of the clerk of works.

"SOLOM'S WOOD."

This house is now being built, the walls of grey Crowborough bricks, with red dressings to the angles and windows, and rough-cast and tiled roof.

The gardens and terraces, etc., and entrance-lodge are also in hand. The builders are Messrs. Jones & Son, of Sutton.



BOOKS RECEIVED.

TRANSACTIONS OF THE SOCIETY OF ENGINEERS: 1904. Edited by Perry F. Nursey, Secretary. (E. & F. N. Spon.)

HYDRAULIC POWER ENGINEERING. By G. Croydon Marks. Second Edition. (Crosby Lockwood & Son.)

REPAIRS, AND HOW TO MEASURE AND VALUE THEM. By George Stephenson. Fourth Edition. (B. T. Batsford. 3s.)

MODERN LIGHTNING CONDUCTORS; a Supplement to the Report of the Lightning Research Committee. By Killingworth Hedges, M.Inst.C.E. (Crosby Lockwood & Son. 6s. 6d.)

The Student's Column.

STEAM BOILERS AND PIPES.—III.

SELECTION OF BOILER TYPE (*continued*).

LAST week we discussed two main factors governing the selection of a boiler type. We have now to consider the last of the three factors enumerated on p. 44.

(3) The probable ratio of steam output to working and other expenses ought always to be taken into account by the architect as the responsible adviser of the purchaser.

The word "probable" is used advisedly in the foregoing sentence. As a matter of fact, the ratio in question depends far less upon the type of boiler than upon the efficiency or inefficiency of those to whom the management of the plant is committed, the manner in which the boiler is installed, and the extent to which appliances and apparatus for the saving of fuel are applied.

Let us first deal with the relative desirability of different boiler types. For this purpose we may refer again to the series of investigations by Professor Kennedy, Mr. Bryan Donkin, Professor Unwin, and Professor Déry.

As usual in boiler tests, the results recorded by these observers give the quantity of coal consumed per hour as well as other data, of which some are contained in Table II. Thus it is quite easy to make a comparison of the fuel consumption per pound of water evaporated or per horse-power developed per hour.

For the purpose of arriving at a comparable estimate of the annual cost of fuel for the boilers mentioned in Table II., it is necessary to assume the working conditions to be the same for each installation.

Let us assume the boilers to be in active use for eight hours daily, the fires being banked up at night. Making no deduction for Sundays and other holidays, this basis would give 365 × 8 = 2,920 working hours, or, for the purpose of simplifying computation, say, 3,000 working hours a year.

Adopting this assumption for the twelve boiler tests in Table II., and, taking the cost of coal at 15s. per ton, the annual coal bill for each installation can readily be calculated, as given in column 7 of Table III.

Next, using the values in column 12 of Table II. for the total cost of the various installations—assuming interest on capital expenditure to be at the rate of 4 per cent. per annum, and repayment of capital to be completed in thirty years—the annual charge in respect of interest and sinking fund can be ascertained for each boiler, as given in column 8 of Table III.

Attendance and maintenance are items upon which no light is thrown by the tests to which we refer, and will be mentioned a little later.

From the expenses given in Table III. the annual cost of fuel and the other charges can be computed per pound of water evaporated per hour or per horse-power developed. The latter basis has been adopted for the calculation of Table IV. Examining the figures in columns 3 and 4 of this table, and those in column 5, representing the sum of these values, it is possible to obtain a general idea of the respective merits of the various installations.

Taking averages, it will be seen that, so far as concerns fuel economy, the watertube boiler comes at the head of the list; Cornish tubular, Cornish, and Lancashire boilers next; and locomotive boilers last. The averages are a little altered by the interest and sinking fund charges, but only in the respect that the Cornish and Cornish tubular types appear to equal advantage.

It must be admitted that the number of tests quoted is too small to justify any sweeping conclusions. Still, so far as they extend the results are valuable for the reason that they are comparable one with another, which certainly cannot be said of numerous published tests by independent observers, owing to the variable methods adopted, the different qualities of coal used, and other causes of divergency.

The cost of attendance is an item that depends very much upon individual circumstances as well as upon the type of boiler employed.

In a general way, it is safe to say that Cornish and Lancashire boilers involve less trouble than watertube, vertical, and tubular boilers. Further, it may be said that Cornish and Lancashire boilers, being of very simple character, do not demand skill of so high an order as most other types. Hence the cost of attendance is comparatievly low for Cornish and Lancashire boilers.

It is also the case that, owing to the large volume of water contained in boilers of these types, the time actually spent in stoking is less than that required for watertube, vertical, and tubular boilers. Still, this circumstance is not necessarily a source of economy, because it does not always follow that periods of leisure enjoyed by the fireman will reduce the wages bill. A particular example of this is furnished by an establishment where only one man is required in the boiler-house.

The number of boilers in an installation, the nature of the steam demand, and the character of the establishment wherein steam generators are used are factors directly affecting the cost of management, and there will naturally be a great difference between the charges for attendance in a commercial undertaking and a poor-law institution, where part of the labour can be provided free of expense.

We have seen that Cornish and Lancashire boilers are fully equal to other types in efficiency, and if space permits their employment they are to be preferred for all ordinary work. For some special purposes the watertube type possesses clear recommendations, although, as shown by Table I., it occupies nearly as much space per pound of steam produced as a Lancashire boiler.

Among the advantages claimed for the watertube boiler are rapidity of circulation and steaming, uniformity of temperature, reduced liability to explosion, and the limitation of explosions to one or more tubes.

But in these boilers the pressure of steam is subject to considerable fluctuations, and ebullition may become excessively violent unless thoroughly efficient and skilled attendance is provided.

The question of maintenance is another matter to be borne in mind when choosing a boiler type. Here, again, everything points to Cornish and Lancashire boilers as the most easy to clean and as requiring the fewest repairs.

Watertube boilers are of complicated construction, the tubes are liable to leak and burst, and, although makers point out that repairs can be very speedily executed, experience certainly indicates that they are frequently required. In an establishment like an electricity-generating station, for instance, or in a factory where skilled mechanics are always available, it may be possible to effect such repairs as become necessary without much trouble. In public institutions and buildings where the staff is not qualified to undertake repairs in a satisfactory manner the case is quite different. Further, considerable delay and consequent inconvenience may be caused by the failure of one or two tubes in boilers used in country districts, especially if new parts have to be ordered from the makers.

As for the various types of tubular boilers, it should be noted that these generally require careful watching, and that in default of this such boilers are exceedingly apt to develop faults, causing stoppages of work.

All tubular boilers, including those which represent combinations of the Cornish or Lancashire types with the multitubular form of construction, are difficult to examine and keep in order owing to their cramped design, and the renewal of tubes is an operation necessitating skilled labour, which cannot always be furnished by the regular staff of the establishment in which such boilers are employed.

Taking all things into account, we are justified in the statement that, so far as concerns the ratio of steam production to working expenses, the Cornish and Lancashire types are the most suitable for general adoption.

Influence of Management on Boiler Efficiency.—As we have had occasion to refer to the question of attendance in this article, the present is an appropriate place to make a few remarks on the importance of efficient supervision of the operations conducted in the boiler-house. Steam users generally desire to secure economical results, although they frequently fail to take the measures necessary for arriving at this end. In many public institutions we have known the management of steam boilers to be entrusted to firemen having very shadowy notions as to the treatment most likely to result in economy of fuel, and in more than one case we have known the care of a boiler to be vested in a labourer having no previous experience, and having no one to whom to look for instructions and guidance.

Economy of coal can only be effected if steam users will take the trouble to investigate what goes on in their boiler-houses

TABLE IV.—FUEL, INTEREST, AND SINKING CHARGES PER HORSE-POWER FOR BOILERS IN TABLE III.

No.	Type of Boiler.	Fuel.	Interest and Sinking Fund.	Total.
		£	£	£
1	Cornish	3·20	0·81	4·01
2	,, ...	4·48	0·43	4·91
3	Lancashire	4·12	1·05	5·17
4	,, ...	3 94	0·57	4·51
5	Cornish Multitubular	3·82	1·09	4·91
6	,, ,,	3·69	0·33	4 02
7	Locomotive	4·25	0·47	4·72
8	,, ...	5·22	0 95	6·17
9	,, ...	3 82	0·37	4·19
10	,, ...	4·29	0·41	4·70
11	W't'rtube(De Naeyer)	3·58	0·49	4· 7
12	,, ,,	3·73	0·53	4·26

TABLE III.—RATIO OF STEAM PRODUCTION TO ANNUAL EXPENSES (WITHOUT ATTENDANCE AND REPAIRS).

No.	Type of Boiler.	Dimensions. Length.	Dimensions. Diameter.	Water Evaporated per hour.	Horse-power at 30 lb. of Steam per h.p.	Annual Expenses per Horse-power. Fuel.	Interest and Sinking Fund.	Total.
		ft. in.	ft. in.	lb.		£	£	£
1	Cornish	30 0	5 9	1,467	48·9	156·98	39 62	261·60
2	,, ...	18 9	5 6	2,104	70·1	313·88	30·37	409·25
3	Lancashire	21 0	7 0	1.277	42·6	175·57	45·08	285 65
4	,, ...	21 0	7 0	2,369	79·0	311·47	45·08	421·55
5	Cornish Multitubular	9 7	4 4	444	14·8	56 62	16·08	137·70
6	,, ,, ...	19 0	7 0	3,920	130·7	482·10	43·50	590·60
7	Locomotive	6 0[1]	3 0	676	22·5	95·54	10·70	171·24
8	,, ...	6 0[1]	3 0	335	11·2	58·42	10·70	134·12
9	,, ...	7 9[1]	3 7	1,087	36·2	138·45	13·53	217 98
10	,, ...	7 7½[1]	3 6½	920	30·7	131·85	12·50	209 35
11	Watertube (De Naeyer)....	14 9	2 7½[2]	2,026	67·5	241·72	33·72	340·44
12	,, ,, ...	14 9	2 7½[2]	1,9 7	63·9	238·72	33·72	337·44

[1] Dimensions of barrel. [2] Diameter of drum.

either personally or by employing competent engineers.

In a large public institution, where steam is required for warming buildings, for heating water for laundry, bath, cooking, and other domestic purposes, and for operating laundry and electric-light engines, pumps and other machinery, the expenditure on fuel is a very important item, and should be the subject of close scrutiny. It is, then, very desirable to ascertain whether the boilers are being worked economically, and, if not, to determine what measures ought to be taken for placing matters upon a proper footing.

It may become necessary to take observations of the flue temperatures and to analyse the gases under different conditions of stoking until a mean has been found giving the smallest possible loss of heat up the chimney.

As some boilers are worked so as to give an efficiency of more than 80 per cent., while others show less than 60 per cent., there is generally a possibility of reducing the waste up the chimney by nearly 20 per cent., thus effecting an economy which, on a coal bill of 300*l*., works out to 60*l*. a year.

The architect is frequently expected to advise his clients on the management of the plant installed under his directions, and for this reason it is desirable that the bearing of management on boiler efficiency should be clearly understood.

If the fire of a boiler be maintained under theoretically perfect conditions, every pound of carbon would require 11·59 lb. of air to ensure its complete combustion, and the weight of the products of combustion would be 12·59 lb. The combustion of 1 lb. of carbon generates 14,540 British thermal units, and, taking the specific heat of the furnace gases at 0·237, the temperature of the flame over that of the air admitted to the furnace will be :—

$$14{,}540 \div (0{\cdot}237 \times 12{\cdot}59) = 4{,}875 \text{ deg. Fahr.}$$

Assuming that, by being passed over the heating surfaces of the boiler, the temperature of the heated gases is reduced to 487·5 deg. Fahr. over that of the air admitted, the heat abstracted by the boiler is 90 per cent. of the total amount generated, only 10 per cent. being wasted up the chimney shaft.

In actual practice, perfect combustion cannot be secured with less than 14 lb. of air per pound of coal. This means that the weight of waste gases is increased to 15 lb., with a corresponding reduction of flame temperature to :—

$$14{,}540 \div (0{\cdot}237 \times 15) = 4{,}091 \text{ deg. Fahr.}$$

Hence, if the gases be cooled down as before to 487·5 deg., the practical efficiency of the boiler becomes :—

$$(4{,}091 - 487{\cdot}5) \div 4{,}091 = 88{\cdot}08 \text{ per cent.}$$

Supposing the stoker admits so much air that the waste products weigh double the theoretical weight, the flame temperature will be :—

$$14{,}540 \div (0{\cdot}237 \times 25{\cdot}18) = 2{,}437{\cdot}5 \text{ deg. Fahr.}$$

But, owing to the lower temperature of the furnace gases, a smaller proportion of the heat will be transmitted through the plates into the water, and it is probable that the final temperature of the gases will be about 600 deg. Fahr.

Consequently, the efficiency of the boiler will be reduced to :—

$$(2{,}437{\cdot}5 - 600) \div 2\,437{\cdot}5 = 75{\cdot}38 \text{ per cent.}$$

In very bad practice the products of combustion sometimes weigh as much as forty times the weight of the fuel consumed. Then the flame temperature will be further reduced, and the proportion of heat absorbed by the water further decreased, so that the boiler efficiency may drop to about 50 per cent. In such a case half the heat furnished by the coal is literally wasted up the chimney, and, even after making allowance for an inevitable loss of 12 per cent., we have the result that 25 per cent. of the coal burned is wasted by the ignorance of the fireman.

Incomplete combustion, which is usually accompanied by excessive production of smoke, is another cause of reduced efficiency, and is largely due to inadequate supplies of air, especially at times when fresh fuel has been added to the fire. If all the coal used in a boiler were burned so as to produce carbon monoxide (CO), instead of carbon dioxide (CO_2), only 4,340 instead of 14,540 British thermal units would be generated per pound of carbon. Thus the value of the coal would be reduced by two-thirds or more. As a rule, however, the proportion of incompletely-consumed fuel is not large, except in cases of very bad stoking, to which the attention of the owner or manager of a public institution or other establishment should be attracted by the excessive amount of smoke coming from the chimney shaft.

The discussion of other matters affecting the efficiency of steam boilers must be deferred until next week.

OBITUARY.

MR. HAYWARD.—We announce with great regret the death, on July 5, in his seventy-fifth year, of Mr. Charles Forster Hayward, of the Guest Hall, Lingfield, Surrey, and of No. 50, Great Russell-street, W.C., architect, and District Surveyor, London. Mr. Hayward was elected in 1855 an Associate, and in 1861 a Fellow, of the Royal Institute of British Architects, of which he served as member of the Council, and joint honorary secretary with Mr. J. P. Seddon. In 1851 he was elected member of the Architectural Association. Having studied in the Royal Academy schools he became an assistant of P. & P. C. Hardwick, and then began to practise at 8, Adam-street, Adelphi, in association with the late Professor T. Roger Smith, who had been his colleague, with Sir A. Blomfield, C. Eastlake, and G. J. Nicholl, in the Hardwicks' offices. In 1871 Mr. Hayward succeeded the late Charles Fowler as District Surveyor for St. George, Bloomsbury, and St. Giles-in-the-Fields combined parishes; a rearrangement of the district areas having been effected ten years ago, he was appointed District Surveyor for St. Giles-in-the-Fields, St. George, Bloomsbury, St. Martin-in-the-Fields, St. Anne, Soho, and St. Paul, Covent Garden, parishes, with, for a limited period, certain adjoining portions of other parishes, and he filled that office until his death. Of Mr. Hayward's principal architectural works the following have been illustrated, together with plans, in our columns: The Duke of Cornwall Hotel, Plymouth, for the Plymouth Hotel Company (July 4, 1863); St. Andrew's Church, Malden-road, Haverstock Hill, N.W., after the Gothic style (September 14, 1867); "Oaklands," at Halstead, Essex (May 18, 1872); a wooden house, near Christiania (June 21, 1873); the Public Hall, Harrow, for a limited company (January 23, 1875, exterior and interior); for Harrow School: the Sanatorium, with laundry and residential quarters (January 23, 1869), the Gymnasium and Workshops (January 23, 1875, interior), and the Natural Science Schools and Laboratories (December 11, 1886); Christ Church, Zanzibar, for Bishop Steere who superintended the erection of the church on the site of the old slave-market (May 28, 1881); the rebuilding of Nos. 7-8, Bloomsbury-square, W.C. (February 5, 1881); and the large block opposite the British Museum, consisting originally of Russell, the Duke's, and Montague mansions (since modified as Museum-mansions, the Thackeray Hotel, and Great Russell-mansions), together with Nos. 50-51, Great Russell-street, built in 1891-6 between Bury and Museum streets on the site of twenty-two houses in Great Russell-street and Gilbert-street at the rear (April 13, 1895). About forty-five years ago Mr. Hayward formulated a scheme for the reparation of the Church of St. Peter, Colchester; his designs for a reconstruction of the brick-cased tower were partially carried out, and he designed the stone case for the illuminated clock-dials sustained by a projecting ornamental support of Portland stone (March 21, 1896). In 1870 Mr. Hayward was employed as architect for the further alteration and improvement of Nash's Gothic Church of St. Mary in Brunswick-street, Haggerston, N.; and in 1878 (*teste* C. Mackeson's "Guide") for the similar treatment of Coleman's late Gothic Church of St. Philip in New-street, Stepney, E. In the *Builder* of December 29, 1888, is published a drawing of his proposed Clock Tower which the late Mr. George Errington, of Lexden Park, had intended just before his death to erect on the site of St. Runwald's Church, Colchester, since pulled down. Mr. Hayward was architect of the Harrow Local Board Offices and Fire Station (February 17, 1894); of many houses and mansions in London and the provinces, amongst which we may instance a house, for Mr. Baxendale, in Brook-street, Mayfair, and a large half-timbered mansion, Colrennick, near St. Germans, Cornwall, for Mr. Trelawney; "The Firs," Worplesden, Surrey (1886); Copse Hill, for Mr. Brassey; many houses at Halstead; and (including one for himself) at Godalming and the vicinity; several private houses and masters' houses at Harrow; a large hotel at Aberystwith (with Mr. Davies); Nos. 192-4, 258-66, and 242-4, Oxford-street; and Nos. 141-4, Drury-lane, for Messrs. Lambert & Butler, being the last work he did in a private capacity; and he prepared some designs for the St. Giles-in-the-Fields (now Holborn) Public Library. In 1886-7 he carried out the enlargement and improvement of Holy Trinity Church in Little Queen-street (now Kingsway), re-arranging the interior and changing the position of the altar from east to west. His most recent work includes the designs, as a tribute of friendship, for the elaborated Snelgrove memorial chancel-screen in Ilsham St. Matthias Parish Church, Torquay, which is fully described in our number of June 10 last, and he made the designs for the reredos, executed in alabaster and encaustic tiles, in Lawford Church, Essex, in memory of the late Honourable John Robertson, of Lawford-place. Mr. Hayward bestowed much care and labour upon the reinstatement (1897) for his own occupation of the half-timbered house, built in 1431, and known as the Guest Hall, at Lingfield. He restored the church, and wrote a historical account of the Towers at Layer Marney; and made the illustrations for Mr. F. Harrison's book upon Sutton Place, Guildford. Many years ago he perfected a scheme for embanking the Thames between Westminster and Blackfriars, with upper and lower roadways for the Strand and riverside levels. Soon after the opening of the Royal Courts of Justice Mr. Hayward took up the question of making new approaches from High Holborn to the Strand; in the *Builder* of November 18, 1882, will be found his description, and plan, of his projected new streets and communications to serve that object, showing a wide thoroughfare from the end of Southampton-row to a circus at the west end of Portugal-street whence branch two streets to points opposite the churches of St. Mary-le-Strand and St. Clement Danes. Mr. Hayward was a keen antiquarian and archæologist; he was a Fellow of the Society of Antiquaries, a member of Council, London Topographical Society; and in July, 1900, was elected a member of Council, Architectural Museum and Westminster School of Art, being re-elected in the following year. His private practice will be carried on by his son, Mr. A. B. Hayward.

GENERAL BUILDING NEWS.

OWTHORPE CHURCH, NOTTINGHAMSHIRE.—The little Church of St. Margaret, in the village of Owthorpe, three miles from Plumtree Station, has of late years become much dilapidated, and it became necessary that the roof should be overhauled. The work has now been carried out under the superintendence of Messrs. A. W. Brewill, Diocesan Surveyor, and M. B. E. Baily, the contractors being Messrs. Bowman & Sons, Stamford. A flat plaster ceiling has been removed, and the timber roof opened out, such of the timbers as were decayed and rotten have been removed, the whole of the roof tiles removed and the roof retiled, using up all the old tiles that were sound and perfect. The masonry of the windows was also in a defective state, and this has been restored, inserting new stone only where it was absolutely necessary. The lead glazing to the windows has been renewed, using as much of the old glass as possible.

SHINFIELD CHURCH TOWER, BERKS.—The tower of St. Mary's Church, Shinfield, was recently re-opened after restoration. In the tower are six bells—three cast in 1664, one in 1780, one in 1740, and one re-cast in 1803. In 1803 the church bells were taken down and re-hung, after strengthening the tower by putting two bands round the top. In 1863 two more bands were added to the tower from east to west, and an inside arch built to support the west window of the tower. About Easter, 1904, it was intimated to the Vicar by an architect who voluntarily inspected the tower that in his opinion the vibration caused by the six bells was likely to render the tower unsafe, and advised that the peal should not be rung till the defective bell-frame construction had been remedied and the tower strengthened. The Vicar and the Churchwardens elected at the Easter Vestry consulted Mr. S. Slingsby Stallwood, F.S.A., the Diocesan Surveyor, who inspected the tower, and, while expressing his opinion that the ringing of the bells need not necessarily be attended with danger or risk of injury to the structure, advised the overhauling of the gear and the execution of such repair and renewals as might be necessary to secure smoothness of action and minimise the effects of vibration, also the addition to the tower of two ties of iron and belts from north to south, and cutting out some cracks, setting the new brickwork in cement well bonded to the old walling.—*Reading Mercury.*

CATHOLIC CHURCH, WILLINGTON.—On the 5th inst. the new Catholic Church at Willington, near Crook, was dedicated and opened. The cost of the whole erection will be about 4,500*l*. The church, which is in the shape of a cross, is about 90 ft. long, and the breadth is 65 ft.; the dome is 35 ft. high, and the sanctuary has a transept on each side. Rock-faced stone from Dunhouse, Barnard Castle, has been used throughout, and the roof is of pitch-pine and red wood. The windows have been supplied by Messrs. Atkinson, of Newcastle. Adjoining the church is the presbytery, a house of nine rooms. The architects are Messrs. Kelly & Dick, of London. Mr. Hopper, of Wolsingham, was the general contractor.

RESTORATION OF WYMONDHAM CHURCH.—After having undergone restoration, Wymondham parish church was re-opened on Thursday last week. The work, which has been carried out by Messrs. Rattee & Kett, of Cambridge, under the direction of the architects, Messrs. Hicks & Charleswood, of Newcastle-on-Tyne, comprised the restoration of the carved roofs of the nave and north aisles, and a new roof on the south. The roofs are all leaded. The stone work, both inside and out, has been cleared of colour wash, and most of the windows have been reglazed with cathedral glass. The monuments on the pillars have been removed to the walls of the north and south aisles. The sanctuary has been paved with marble, and choir stalls in oak, with carved poppy heads, have been provided for the surpliced choir. An altar-rail in open work has been given by Mr. Kett, and a stone screen has been erected for the organ at the west-end of the building, and the three-manual instrument has been restored by Messrs. Glasspoole Brothers, of Wymondham.

BAPTIST CHURCH, STOCKSFIELD, NEAR NEWCASTLE-ON-TYNE.—A new church has been erected upon a site abutting the main highway between Mickley and Stocksfield. The building is of stone, and has been erected by Messrs. Smithson & Son, of Prudhoe, from the designs of Messrs. W. Dixon & Son, architects, of Newcastle-on-Tyne. Accommodation is provided for some 200 worshippers.

ST. ANNE'S CHURCH, BRISLINGTON. — The Bishop of Bath and Wells recently dedicated the new Church of St. Anne's, Brislington. The building is Gothic, and is constructed of Pennant stone with Bath stone facings, the interior being of Bath stone alone. It consists of a nave, two aisles, and transepts, and provides accommodation for about 450, but the plans include a chancel, morning chapel, two vestries, and an organ chamber, and these will be added later. The cost so far has been 3,400*l*. The floor is of oak blocks, and there is an open ceiling, carved corbels supporting the principals of the roof. There are flying buttresses between the aisles and transepts, and five bays in the arcading. Inside the west entrance a pitch-pine screen is erected, with lights, and the seating accommodation is by chairs. The building was designed by Mr. H. M. Bennett, and the work has been carried out by Messrs. E. Walters & Sons.

S. OSMUND'S CHURCH, PARKSTONE.—The chancel and north transept of this church were opened on the 3rd inst. The style adopted by the architect, Mr. G. A. Bligh Livesay, is in its main features that of the early Christian churches of Southern Europe, of the "basilica" type, the details, however, being of more classical a character than was usual in those buildings. The plan of the church is cruciform, and the central crossing, of which the four piers are built, is to be surmounted by a dome. The chancel terminates in an apse, with semi-dome, and is surrounded by an ambulatory, divided from it by Ionic columns. The floor upon which the altar rests is of teak and ebony, with a slab of red Devon marble, and it stands under a "baldacchino" or canopy, modelled on a well-known ancient example. Round the sanctuary are places for clergy, with a seat for the bishop in the centre, behind the altar, in basilica fashion. There is some beautiful old wrought-iron work between the columns of the apse, formerly in the Church of S. Mary le Bow, Cheapside. This was given by the Rector and Wardens of S. Mary's, and has been remodelled and placed in position by Mr. Seller. The chancel extends under the crossing, and there are two "ambones," one for the reading of the Epistle and of Lessons, and the other for the Gospel and to serve also as pulpit. The floor and steps of chancel sanctuary and ambulatory are in "terrazzo." No stone is employed in the building, except in the pavement already described. All the chief permanent work of the interior is of terra-cotta, supplied by Messrs. Carter & Co., of Poole. It is of two shades, most of the surface and some of the moulded work being a light buff tint, and the greater part of the mouldings, including the whole of the Ionic columns, of a rich red. The baldacchino, including its four Corinthian columns, is in a terra-cotta material of a finer kind, with a slight glaze and of delicate blue-green hue. The considerable elevation of the chancel floor has given opportunities for a spacious crypt, which has accommodation for the heating apparatus and for the appliances connected with the supply of water, gas, and electricity, as well as for a temporary vestry for clergy and choir. The church will be warmed by hot water on the low-pressure system, and the lighting is partly by gas and partly by electricity. The organ is the work of Mr. George Johnson, of Bristol. The remainder of the furniture consists of desks for clergy and choir, seats for the choir-boys, two credence-tables for the sanctuary, and chairs for the congregation. With the exception of the last item, they are all of oak, and all are stained green. Nearly all the furniture, fittings, and ornaments have been designed by the architect. The ancient font which has been in use in the iron chapel has been retained for the new church, and stands in the north-west corner of the nave. The following firms have been employed in the structure and fittings:—Messrs. Miller & Sons and J. McWilliam & Son, and W. Hoare, builders; Messrs. Carter & Co., terra-cotta; Messrs. Homan & Rogers, steel construction; Messrs. Diespeker & Co., marble terrazzo; Mr. William Morris, glass; Messrs. Henry Hope & Sons, heating, etc.; Messrs. Earpe, electric lighting; Messrs. Seller & Co., gas and old iron work; Mr. G. Johnson, organ; Messrs. Watts & Co., sanctuary ornaments; Messrs. Jones & Willis, sanctuary fittings; Messrs. West & Collier, T. Manuel, Mew & Tapper, and J. Burdett were also concerned in the work.

MEMORIAL CHAPEL, CAMBRIDGE.—The foundation-stone of the Moulton Memorial Chapel, which is being erected in connexion with the Leys School, Cambridge, was recently laid by the Duchess of Albany. When completed the edifice will be in harmony with the style of the existing school buildings. The body of the chapel will seat 320 boys, but in addition the space reserved for the choir will seat forty more, and the west gallery fifty-five more. There is to be a vestibule at the west end, two porches on the north and south sides, a vestry over which will be the organ loft, opening into the chancel by means of two arches, and a bell turret, rising, octagonal in shape, above the roof. The upper part will be composed of stone, and it will terminate in a canopy, carrying finally on its summit a copper vane. The walls externally will be faced with red brick, relieved by Monks Park Bath stone dressing, and inside they will be faced with Barleigh Down Bath stone ashlar enriched with decoration. Outside, the roof will be covered with red Broseley tiles. The system of ventilation consists of inlets in the back of the hot-water radiators with which the chapel will be heated. The floor will be of white and black marble slabs, with squares, enclosed within a border, and under the seats it will be of selected oak wood blocks. The lighting will be by electricity. The architect is Mr. Robert Curwen, and the builder, Mr. W. Saint, Cambridge. The cost will be about 9,000*l*.

MANNVILLE CHAPEL AND SCHOOL, BRADFORD.—The trustees of the late Mannville Chapel have agreed to buy a piece of land, some 2,000 sq. yds. in extent, at the corner of Shearbridge-road and Woodhead-road, and to build a chapel facing Shearbridge-road to accommodate some 420 persons, and to build a school facing Woodhead-road. The scheme also includes the provision of a caretaker's house. Messrs. W. J. Morley & Sons, Messrs. Walker & Collinson, Mr. Abraham Sharp, and Mr. Edgar H. Parkinson, all Bradford architects, have consented to submit designs, and particulars of the trustees' requirements are now in their hands.

BAPTIST SUNDAY SCHOOL, LECTURE HALL, ETC., SOUTHPORT.—On Saturday, July 8th, eight memorial stones were laid in connexion with the new Sunday schools, etc., for the Baptist Tabernacle, Southport. The present school, only built about fifteen years ago, was too small and altogether unsuitable for the requirements. The new buildings will occupy the site of the present school and a pair of cottages adjoining, which are being taken down for the purpose. The main schoolroom is 53 ft. by 32 ft., with entrances at each side of Scarisbrick New-road front. A staircase leads up from one of these entrances to a balcony around three sides of the school. There is an infants' classroom, twelve other classrooms, kitchen, large minister's vestry, lecture hall, and library. There is a gentleman's cloak room with lavatory, and similar accommodation for ladies opening out of each entrance respectively. Two new staircases are to be provided to the Tabernacle, and various alterations to the organ and choir gallery are also to be carried out. Mr. Francis P. Halsall, of Southport, is the architect, and Messrs. Duxfield Bros. are the builders. The cost, exclusive of land, will be about 2,500*l*. The elevations are being carried out in pressed brick and grey terra-cotta from Mr. Jabez Thompson's works at Northwich.

FREE LIBRARY, NEWBURY.—The foundation-stone has just been laid of the new Free Library at Newbury. The library will be of red brick, with stone dressings, and a roof of Broseley tiles. There is a porch, inside which will be racks for newspapers for the daily morning readers. The porch will lead into a hall with a mosaic floor. The lending department will be on the right in entering, and the indicator system will be adopted: The room will be 24 ft. by 30 ft., with west bow window, and accommodation will be afforded for 10,000 volumes. Overlooking the lending and reading rooms will be the librarian's office. The reading-room will be approached through the hall, and shut off by swinging doors. It will be 45 ft. by 30 ft., with sitting accommodation at tables for seventy persons, and standing at the wall racks for forty others. At the west end of the reading-room will be a gallery, which can be used as a book-store. On the first floor will be a reference-room and a students'-room. An attic will afford the necessary storage accommodation, while the old gaol basement will be used for the hot-water apparatus. A roadway will be left on the south side of the building. Mr. S. J. Lee Vincent is the honorary architect. The builders are Messrs. Hoskings Brothers, of West Mills, Newbury.

SEAMEN'S HOSPITAL, CARDIFF.—The new Seamen's Hospital, at Cardiff, the greater part of the site for which was given by the Marquess of Bute, who opened the building recently, is close to the old hospital ship, the *Hamadryad*, and is on land which was formerly covered by spring tides. The superstructure consists of the hospital wards, the administrative block, doctor's house, operating theatre, laundry, etc. The entrance to the hospital is in Ferry-road. From the entrance porch a corridor leads to the wards. On the right of this corridor on entering is a waiting-room for out-patients, and consulting-room, dispensary, etc., and a small accident ward for receiving and examining cases before sending them on to the wards. Also on the right of the corridor is the main stairs, with a bed-lift in the well of the stairs. On the left of the corridor are the kitchen, staffroom, stores, etc., and at the end of the corridor the wards and their adjuncts. The wards are on three floors, a main ward, containing sixteen beds, and a small ward, with two beds, on each floor—fifty-four beds in all. At the entrance to the wards is the duty-room, with lifts, pantry, etc., and at the further end of the main ward a large day-room facing south, with bathrooms, sink-rooms, and emergency stairs. There is also a recreation-room on the first floor in the front of the building. The wards and corridors are heated by low-pressure hot water, and are lighted by electricity. The ventilation is natural, with air inlets near the floor and outlets into flues near the ceiling. The incoming air is warmed in cold weather by radiators. The floors of the wards are of marble terrazzo, the walls and ceilings being finished with Portland cement worked to a smooth surface and painted. The operating theatre and Rontgen ray-room are connected to the administrative block by a covered way. There are also a small mortuary, viewing-room, and post-mortem room. The doctor's house is at the western side of the block, and is connected by a covered way with the administrative block. There is a small infectious ward, which has no communication with the rest of the building. The buildings are designed in red brick, with red-stone, Bath stone, and terra-cotta dressings. Mr. E. W. M. Corbett was appointed the architect. Tenders were invited for the foundations and the superstructure, and those of Messrs. W. Thomas & Co. were accepted, the aggregate amount being about 22,300*l*. The total cost of the building and furnishing of the institution has been 30,000*l*.

DENTAL HOSPITAL, BIRMINGHAM.—On the 6th inst. Sir Oliver Lodge opened the new Dental Hospital, erected in Great Charles-street, at a total cost of 10,000*l*. The architects are Messrs. Bateman & Bateman, of Birmingham. The cost of the building is estimated at 8,500*l*., and the equipment at a further 1,500*l*. The new building has a frontage of red brick with stone dressing, and it consists of four stories. On the ground floor there is a general waiting-hall and accommodation for the staff, also classroom, students'-room, and museum. On the first floor there are rooms for operations, with and without anæsthetics, also a lecture-hall. There are also separate recovery rooms for male and female patients. On the second floor there are filling and saving rooms, specially lighted. The top floor also possesses a mechanical department and work-room for making artificial teeth and crowns. The staircases are arranged so as to give the patients easy access to the various departments, and for their egress so as not to cross or pass along the corridors used for entrance. Measures are adopted for the teaching of University students.

MARINE LAKE, MALDON.—The new salt-water lake and bathing-place at Maldon, was opened a short time ago. The lake is 230 yards long, 70 yards wide, and it has an area of between 2 and 3 acres; its greatest depth is 7 ft., and it contains approximately 3,000,000 gallons of salt water, which is admitted by means of a 2-ft. pipe from the River Blackwater through a sluice. There are two bathing-sheds—one for ladies and the other for gentlemen—each containing six cubicles, the one for gentlemen being provided with diving-boards. The land was acquired by the Corporation at a cost of 525*l*., the excavation, etc., cost about 450*l*., and the buildings 200*l*. The work was carried out under the superintendence of Mr. T. R. Swales, the Borough Surveyor.

POST OFFICE, ROTHBURY, NORTHUMBERLAND.—A new post office has been erected in Bridge-street, Rothbury. The work has been carried out from plans prepared by Mr. J. G. Burrell, architect, Durham. Mr. John Wake, of Rothbury, being the contractor; Mr. Wm. Shotton had the sub-contract for carpenter and joiner's work; Mr. J. Gregory for slating and plastering; the plumbing and smiths' work was done by Messrs. Reavell Brothers, Alnwick; and the painting and decorating by Mr. F. Roper, Thropton.

HOUSING SCHEME, HIGH WINCOBANK, SHEFFIELD.—The competition promoted by the Health Committee and the City Council resulted in the submission of several designs, the first premium, as already mentioned in our columns, being awarded to Mr. H. L. Paterson, of Sheffield. The houses, twenty in number, will be erected in

a new street abutting on Windmill-lane, High Wincobank, Each house will have on the ground floor a living room 14 ft. by 11 ft. 7 in., scullery 8 ft. 6 in. by 8 ft., pantry, coal place, and water-closet. The whole accommodation will be provided within the walls of the house, there being no projections or outbuildings at the back. A small concrete bath will be provided in the scullery between the copper and sink. On the first floor there will be a bedroom at the front large enough for two beds, and at the back will be two rooms, each for one bed. Each house will have a separate front garden and a separate yard. The approach to the latter will be by a 5 ft. wide passage parallel to the houses, which will also give access to the space beyond reserved for gardens. This will be 60 ft. in depth, and each house will have about 100 sq. yds. in area of back garden. Tarred wood fences will be used to divide the whole of the gardens and yards. The houses will be of brick and the roofs slated. Casement windows will be used throughout, and it is intended to paint the woodwork white. The estimate is 2,520*l.*, or 126*l.* per house.

REMODELLING OF NEWCASTLE-ON-TYNE WORKHOUSE.—On the 5th inst. the new wards of Newcastle Workhouse were opened. They were formerly occupied by the children of the house, and face immediately on to the West Turnpike. The exterior walls alone remain of the old dormitories occupied by the children, and in all some twelve wards have been fitted up. The building work has been done by Mr. Thos. Weatheritt; the heating and engineering by Messrs. Emley & Sons; and the electric lighting by Mr. S. H. Gowdy, all of Newcastle; Messrs. Newcombe & Newcombe, Newcastle, being the architects.

FIRE-STATION, DARLINGTON.—The new premises of the Darlington Fire Brigade, in Borough-road, have now been completed. They comprise an engine-house to the front, with stables in the rear. Flanking these on one side are houses for the captain and three men of the brigade, and at the other side the offices and men's dressing-room, while in an upper story are recreation-rooms for the men when off duty. There are brass poles in the corridor by means of which rapid exit can be made from the billiard-room or sleeping-rooms into the engine-house. A feature of the new quarters is the provision of a drying-shed fully equipped with hot-water pipes in which the hose may be tested, dried, and aired. The plans were prepared by Mr. G. Winter, Borough Surveyor.

TOGO MILL, PATRICROFT.—On Friday, last week, the Mayor of Eccles cut the first sod as a commencement of work on this new mill, which is designed to spin twist ring yarn from American cotton, and mule yarn from Egyptian cotton, its full equipment being 115,000 spindles. The building, inclusive of boiler house and engine house, will cover an area of 5,400 sq. yds., which will be the extent of basement and of ground floor; the first, second, third, and fourth floors each covering 4,500 sq. yds. A departure is made from the ordinary method of using columns of cast-iron internally and bulky brick piers in the outside walls, by the design of a complete steel frame structure, the internal columns being of steel and the outside walls being carried by girders which rest on steel columns running down the centres of the piers. The piers are thus very much reduced in width and depth, and a considerable increase in window space and correspondingly greater access of light is the result. The floors are of concrete boarded over in the ordinary way. The roof is flat and capable of forming a reservoir for water. The machinery will be supplied by Messrs. John Hetherington & Sons, of Manchester. Power, provided by a 1,700 h.p. vertical triple expansion engine, will be transmitted by rope drives. The usual equipment of sprinklers, humidifiers, heating apparatus, and electric lighting will be provided. There will be two hoists, two stairways, and two fire escapes.

STAINED GLASS AND DECORATION.

WINDOW, S. COLUMB MAJOR, CORNWALL.—A large five-light east window has just been put up in this church by Messrs. Percy Bacon & Brothers under the superintendence of Mr. G. Fellowes Prynne, architect. The subjects of the five lights are as follows: The centre light contains Our Lord in majesty at the top, beneath which are SS. Probus, Grace, Columba. In the extreme left light, Abraham and Moses appear at the top, and SS. Alban, George, and a kneeling figure of Bishop Laud under, while in the end right-hand light are David and Isaiah, with SS. Genevere, Petroc, and a kneeling figure of King Charles. The two lights on each side of the central one, contain S. John and the Virgin at the top, with SS. Paul and Peter, and Bede beneath; and in the other light, Mary Magdalene and John the Baptist at the upper part, and SS. Luke and Stephen, and Pope Boniface under. In the tracery, thrones, virtues, dominations, powers, archangels, principalities, and angels are shown, with Cherubim and Seraphim in the top portion.

SANITARY AND ENGINEERING NEWS.

KIRKINTILLOCH'S NEW WATERWORKS.—The work of providing additional water storage capacity for the burgh of Kirkintilloch has now been completed, after operations extending over a period of three and a half years. The engineer for the work was Mr. W. R. Copland, and the contractor Mr. James Miller, Kirkintilloch. The new reservoir is to feed the lower reservoir at Antermony, and is built on ground belonging to Sir Archibald Edmondstone on the Campsie Hills. It is to have a capacity sufficient to send down a daily supply in dry weather of 350,000 gallons for 120 days. It is costing over 20,000*l.*

HIGH LEVEL BRIDGE, NEWCASTLE.—The new high level bridge across the Tyne will be ready for use within the next eighteen months. The three piers of granite in the river bed have been implanted on foundations which go down to a depth of 70 ft. below high water. These piers are built on caissons, the lower portion of which from the bottom of the foundation to the bed of the river is filled with concrete. The south and centre piers have also been finished, while the remaining pier on the north side has already been built up to some 30 ft. above high water mark. All the north approaches are finished. On the south side the work of putting together the girders is being carried on. The weight of the steel girders, tracings, parapets, etc., used in the four spans will be about 5,500 tons. There are five girders to each span, and they weigh 350 tons each. On the land span on the south side all the girders are finished, and everything is complete save for part of the decking. Over the first river span, on the wooden staging, two girders have been practically finished. The bridge, which Mr. C. A. Harrison has designed, is being built by the Cleveland Bridge Company.

BRIDGE, SHEFFIELD.—On the 6th inst., Alderman T. Nixon, chairman of the Sheffield Corporation Improvement Committee, opened the new Weedon-street Bridge over the river Don, which provides communication between Tinsley and Brightside. The contract for the new structure was let to Mr. Craig, of Manchester, at 10,500*l.*, to which must be added the cost of paving the bridge and its approaches and other incidentals, bringing the cost up to 12,500*l.* The Improvement Committee have taken the opportunity of reducing the gradients and also of widening Weedon-street, along which tram rails are being laid, and the total expenditure on the scheme is something like 32,000*l.* The new bridge is built of steel and masonry; squared masonry piers and abutments support steel girders, which carry a steel trough decking, on which the paving of the roadway is laid. The work was carried out under the supervision of Mr. C. F. Wike, the Borough Surveyor.

FOREIGN.

FRANCE.—The British Embassy in the Rue du Faubourg St. Honoré was re-opened last week, after having been closed for a year for decoration under the direction of Mr. Vye-Parminter, an English architect practising in Paris. The main staircase and vestibule have been redecorated with stone panels, the fine old Louis XIV. wrought-iron balustrade has been carefully restored, and the staircase is now lighted by a bronze lantern, reproducing one of the Louis XIV. lanterns in the château of Versailles. In the first drawing-room portraits of King Edward and the late Queen Victoria have been hung; the white-and-gold or second drawing-room has been restored; and the third drawing-room—known as the King's Drawing-room—has been hung and upholstered in green silk. The ballroom has been restored and improved, the Throne Room has been re-tapestried, and the hangings of the throne have been renewed. At King Edward's request a lift has been installed in the Embassy, for his Majesty's use when he is in residence, and the Royal apartments on the first floor have been entirely renovated. The Ambassador's private dining-room on the first floor has been redecorated with sculptured oak panels in the style of Louis XIV., and on the walls are five old Flemish tapestries after Teniers.——The Institut de France has accepted the monumental statue of the Duc d'Aumale executed by the late M. Dubois, and offered by his widow. It will be set up in the Chantilly Museum.——M. Buguet, the architect to the Palais Bourbon, has submitted to the Chamber of Deputies a scheme for a new Salle des Scéances to be built along the Quai d'Orsay, with a new façade in the same style as the actual façade, and set out so as to maintain the symmetry of the whole in relation to the Madeleine. The total cost of this proposed new building is estimated at 3 million francs for the new Salle and 6,375,000 for the annexes and the interior finish. A temporary Salle des Scéances would be formed in the Cour d'Honneur which opens on the Rue de l'Université.——Baron Alphonse de Rothschild has left to the Académie des Beaux-Arts a sum of 200,000 francs to found a prize to be awarded every two years.——The works necessary for the enlargement of Salpêtrière hospital will be commenced shortly. The cost is estimated at 1,400,000 francs.——The question of the rebuilding of the Mairie of the XVIIth arrondissement has been the subject of a public enquiry. It is probable that the Mairie, which was built from the designs of Lequeux at the time when Batignolles was still a suburban Commune, will be rebuilt on its present site, but with the addition of some of the ground now occupied by neighbouring houses.——M. Formigé has just completed the building of a new orphanage at Clichy, with funds left as a legacy by Comte Roguet.——Five over-door panels in tapestry, executed at Beauvais between 1899 and 1903, and which were at the St. Louis Exhibition, have been purchased by the Government and fixed in the Hôtel Rambouillet. They are from the cartoons of M. Cesbron, and have cost 45,000 francs. They consist of decorative studies of birds on a ground of flowers.——M. Lecœur, architect, of Paris, has obtained the first premium in the competition for a group of school buildings for the municipality of Dieppe. M. Roffé, of Pont-à-Mousson, has obtained the first premium in the competition for a group of school buildings and a Salle des Fêtes, for the corporation of that town.——A new bridge is to be built over the Marne near Saint-Maur.——The death is announced, at the age of forty-eight, of M. Charles Loiseau, engineer, President of the Chambre Syndicale des Constructions Métalliques, and Director of the Société de Constructions of Levallois-Perret. The death is also announced, at the age of thirty-two, of M. Chas. Bouvier, architect, of Paris.

GERMANY.—In the competition for the enlargement and restoration of the ancient Town Hall at Zeitz the first premium was awarded to Mm. Veil and Elsässer, of Munich.——The foundation stone was laid at the end of May of the Lutheran church at Karlsruhe, designed by Mm. Curgel and Moser.——The monument to Emperor Frederick III., executed from designs by the sculptor, Herr Uphues, has been unveiled.——Herr Wilhelm Feldmann, engineer, died at Bern on June 2nd in his fifty-third year.——Herr Ferdinand Wallbrecht, architect, died at Hanover on June 10th in his sixty-fifth year.

PRAGUE.—An exhibition of the joinery and furniture trades will be held at Prague from August 20 to September 30 next, under the auspices of the Prague Chamber of Commerce. The Technological Museum of Prague will have an international section for motors, wood-working machinery, joiners' machinery, as well as everything appertaining to the joiners' and furniture-makers' trades. Communications should be addressed to Herr Arthur Gobiet, Karolmenthal, Prague, Bohemia.

TASMANIA.—The construction of an aerial tramway from the springs to the pinnacle of Mount Wellington is talked of, and it is improbable that any opposition will be raised to the passage of the Bill. The distance is under two miles, and the system to be adopted will be a double wire rope with counterpoise, with cars travelling at the least possible distance from the ground at ten miles per hour. Motor-cars will carry passengers between the city and the springs.

SINGAPORE.—The building trade in Singapore is, at the present time, very quiet, and has been so for the past twelve months, due, probably, to a lull in the land and property market and, perhaps also, to overbuilding of certain classes of buildings during the same period. At present there is no sign of an immediate recovery, but most of the people interested in the building trades hope for better times. The memorial to the late Queen Victoria, which takes the form of a large ceremonial hall is now rapidly nearing completion, and was to be formally opened by the Governor, Sir John Anderson, on May 24. The site is a good one, with ample vacant space all round, and the building can never be shut out by other buildings, as none of the land around will ever be built upon. The hall faces the sea, with a broad carriage road and open space in front; the back faces the Supreme Court, one side the Government buildings, with a garden in between, and the other side faces the esplanade. The building is attached to the existing town hall, but only by means of covered ways, and it is intended, when the memorial hall is completed, to convert the old town hall into a theatre, the elevations of which will be of the same design as the new hall, and thus make the two buildings into one large block, with the tower, which has already been built, the central feature of a symmetrical elevation. The entrance is through a large carriage porch leading to the grand entrance hall. On the ground floor there is a hall 100 ft. long by 60 ft. wide and 26 ft. high, which will be used as a supper-room when the hall is used for a ball, and can also be used for public dinners. There are verandahs 15 ft. wide on all sides of the hall. The internal decorations of this room have been purposely kept rather plain, and what ornament has been introduced has been, as far as possible, massed. The floor is laid with marble tiles, as are also those of the verandahs, refreshment-bar, service-room, entrance hall, cloakrooms, and lavatories. The

ceiling is of teak, and the heavy Chenghei joists of the hall above are exposed. The doors and all other joiner's work is of Bangkok teak oiled. The upper floor is approached from the entrance hall by two polished marble staircases, one on each side of the hall, one stair having an extra flight leading direct into the verandah of the lower hall. The staircase is 12 ft. 6 in. wide, in easy flights, and is carried on concrete with expanded metal embedded in it, the whole being supported by steel framing. The entrance hall is divided up by granite columns and pilasters carrying heavy enriched entablatures. The staircases land on either side of the foyer, and are screened off with granite columns, from which spring arches. The foyer is very large, about 60 ft. wide by 50 ft. deep and 42 ft. high, and is over the entrance hall and carriage porch, one clear space without columns, and is richly decorated. The floor is of marble, carried on enforced concrete on steel girders. The ceremonial hall, which will be used for great ceremonies and all important public meetings, balls, banquets, and other uses to which such halls are put, is entered from the foyer. It is 120 ft. long by 60 ft. wide and 46 ft. high, and has a segmental domed recess at the far end with a platform. The walls have composite pilasters, with detached columns of the same order in front of them. The whole of this hall is very richly decorated in ornamental plaster, except over the doors, where plain spaces have been left in which the portraits of past Governors and prominent public men will be hung. The floor is of teak in narrow batten widths, supported on joists clear of the walls to give it a spring. The ceiling is segmental in section, panelled and divided up with teak moulded ribs, the panels being formed of "Uralite" slabs The whole of the joiner's work is of teak oiled. Verandahs 15 ft. wide run round the hall, and a refreshment bar and service-room are provided at the back. These are all paved with marble tiles on re-inforced concrete. The tower, which rises between the new and old building, is carried up for a very considerable height in plain rusticated ashlar work, above which are clock dials 10 ft. in diameter under a heavy and projecting cornice. Above this the tower becomes circular on plan, having an open colonnade of short columns, broken at the corners by projecting piers, with a cornice from which the diameter is reduced by masonry scrolls to a plain surface carrying a cornice, which supports the copper dome with the Imperial Crown on top. The tower is 182 ft. high, and, at a level of about 162 ft., there is a flat, from which charming views of the surrounding country for many miles round can be seen. The building will be lighted throughout by electricity, and special attention has been paid to the selection of fittings of suitable design. Electric fans will be provided in all parts of the building. Steel has been used very extensively throughout the building. The plaster cornices are formed on expanded metal, and all the re-inforced concrete is made with the same material. The marble has all been imported from Carrara, the granite partly local and partly from Hong Kong, and the tiles from India. The architects of the building are Messrs. Swan & Maclaren, of Singapore, and the work has been carried out under the supervision of them and the Public Works Department. The contractors were a local Chinese firm.

MISCELLANEOUS.

GERMAN CEMENT INDUSTRY.—In his latest report to the British Foreign Office, Mr. Consul-General Schwabach remarks that although the cement trade was more active than in the last two or three years, and the ruling prices were above the very low rates of 1903, the works were far from fully employed. The turnover (including exports) in 1904 is estimated at 16,000,000 casks, against a producing capacity of 28,000,000 casks. Under these circumstances it seems impossible without the syndication of the industry to keep the prices at a level that insures even a very small margin of profit, and negotiations for the formation of local syndicates and conventions between the different local syndicates have been carried on throughout the year and were partly successful. The financial results of the cement works for 1904 are better than in the preceding years, partly, no doubt, owing to the beneficent influence of the regional syndication of this industry. For twenty-three companies, with an aggregate share capital of 2,450,000*l.*, the average dividend for 1904 was 4·8 per cent., against 4·06 per cent. for 1903.——Mr. Vice-Consul Stevenson, writing from Hanover, observes that the state of the Portland cement industry shows no improvement on that of the previous year. The year 1904 was the third year of open and unrestricted competition. It was not until November, 1904, that attempts to form a syndicate proved successful for arranging the prices in conjunction with the various cement firms whose works are situated in Westphalia and the Rhine district on the west, and in Central Europe on the east, and at the same time to draw up agreements with these groups, from which, however, no advantage accrued for the last year. The open competition which prevailed during the years 1902-04, without any sort of restriction as regards prices and other arrangements, has shown, as far as the cement industry at Hanover and the two neighbouring districts is concerned in periods of excessive over-production, that no improvement in the general conditions of the factories is attainable without some sort of agreement among themselves as to limiting the output and prices. One may, however, reasonably expect that the regulations drawn up by the syndicate as to the sale of cement may produce more healthy conditions and bring about such an improvement as the industry in Central Germany enjoys from similar measures. Notwithstanding the honest intentions of the majority of firms, the financial results of the year 1904 must show a loss, as in 1902 and 1903, owing to the avowed refusal of some firms to adopt measures approved by the majority.——Mr. Consul Ladenburg, reporting on the commercial affairs of the Grand Duchy of Baden, remarks that in cement trade was rather better than in the preceding year, and a few factories were even able to effect a small improvement in price. But that was quite exceptional. On the whole considerable overproduction prevails, and most factories had to reduce their output to avoid further reduction of prices. The great period of the German cement industry belongs to the past, and with the development of cement-making in other countries, above all with the loss of the United States market, it is confined chiefly to the home demand, which is large and increasing. Thus the Heidelberg Mannheim Portland Cement Company report that business in 1904 was tolerably good, the home demand very good, although at very low prices, while little cement could be exported, less even than in former years. Belgian works offered at 1*l.* 3s. 6d. to 1*l.* 3s. 8d. c.i.f. Mannheim in 4-ton lots. The quality, indeed, is described as inferior. A German company which established a branch factory in the United States finds that it does not pay. Owing to a variety of causes the British cement industry that was first in the field has lost its best opportunity; nevertheless, taking into account its natural advantages superior to most countries, it rests apparently only with the energy and enterprise of the British makers to regain lost ground.

NORWEGIAN TIMBER AND STONE EXPORTS.—In his annual report to the Foreign Office, just issued, Viscount Melville, British Consul at Christiania, mentions that the timber business, which in 1903 was on the whole good, fell off very much in the course of 1904, with the result of a serious financial loss to the country. The Vice-Consuls at both Drammen and Fredrikstaad report that 1904 was most difficult for the timber trade. The prices for logs and sawn timber were unreasonably high in comparison with the low prices obtained for low goods, with the result that very few were able to close their books with a profit. Granite and other hard stone increases as an article of Norwegian exportation. Taking an average of the years 1901 and 1902, 136,621 tons were exported, compared with 185,000 tons in 1903, and the quantity has again increased in 1904. But some of this is Swedish stone quarried in Sweden by Norwegians and shipped from a Norwegian port. Most of the Norwegian granite comes from the large quarries in the southern part of Smaalenene. The export to Germany has decreased considerably owing to Swedish competition, but the United Kingdom now takes far more than any other country. Although the export has increased, complaints are made that prices remain too low. The total value of the year's export of hewn stone is estimated at about 165,000*l.* The trade in roofing slates has increased, the exports being now on a large scale. The United Kingdom offers a good market, and Denmark and Germany are spoken of as promising markets for the future. The railway now in course of construction in the Valders district will greatly facilitate the transport from the Slidre quarries.

HOUSING OF THE WORKING CLASSES, MIDDLESBROUGH.—On the 4th inst. an amended scheme for the housing of the working classes in one of the slum districts of Middlesbrough gave rise to considerable discussion at a meeting of the Sanitary Committee of the Middlesbrough Corporation. For about a year and a half the subject of demolishing a number of houses in what is known as the Nile-street area, where the death-rate has been as high as 40 per cent., improving others, and building new dwellings, and also a municipal lodging-house, besides suitable cottages on the Ayresome Grange estate, has been repeatedly discussed. The ex-Mayor, Councillor Charles Dorman, formulated a few months ago a scheme which was sent to a sub-committee for re-consideration. The Borough-Engineer, Mr. Frank Baker, was directed to draw up an amended scheme, and prepare a fresh set of plans and estimates. Mr. Baker now recommended:—(1) That ten houses, facing Broughton-street and Stockton-street, also fourteen houses in Olive-street, be left standing and improved. (2) That in place of the houses to be demolished, fourteen houses of the Gas Works type, and twenty-nine two-roomed cottages be erected; that Vine and Nile streets be widened to 36 ft., and that Princess-street be diverted and made 36 ft. wide. (3) That a lodging-house to hold from 100 to 120 cubicles be erected on the site facing Bridge-street, the new Princess and Nile streets, with the rear thereof facing Olive-street. His estimate for what was required to be done in the Nile-street area was 12,644*l.* 12s., and his estimate for the laying out of the Ayresome Grange Estate and building thirty-two cottages was 6,706*l.* 4s. 2d. In the Nile-street area the following accommodation would be provided: fourteen Gas Works type of cottages, seventy persons; twenty-seven two-roomed cottages, eighty-one persons; four-roomed cottage, five persons; houses altered and improved, 120 persons; municipal lodging-house, 100 persons. On the Ayresome Grange Estate accommodation would be provided by the proposed thirty-two cottages for 160 persons. The total number of persons thus provided for under the scheme would be 536. The estimated annual revenue of 1,899*l.* 17s. 6d. was based upon the rents as follows: twenty-four houses altered and improved, 5s. per week, 312*l.*; fourteen cottages, Gas Works type, 5s. per week, 182*l.*; twenty-seven two-roomed cottages, 3s. per week, 210*l.* 12s.; one four-roomed cottage, 4s. 6d. per week, 11*l.* 14s.; and revenue from the lodging-house, ninety beds at 5d. each per night, 684*l.* 7s. 6d. The scheme was ultimately carried.—*Yorkshire Herald.*

A NEW WINDOW SASH.—Messrs. R. P. B. & R. Wright (Leeds) send us a working model of their new patent sash, which has much to recommend it to attention. It is a kind of combination of sash window and casement window; the vertical (sash) action being intended for the ordinary opening of the window for air, the casement action for cleaning. The cords, pullies, and weights are at one side of the window only (this may be a practical difficulty in large and heavy windows), and on the same side is a vertical rod to which the sash is attached by metal grips, arranged to slide up and down on the rod. When the lower sash is pushed up some little distance it meets a bead coming part way down the frame, which keeps it in position; but if only raised slightly, it can be swung in like a casement, on the vertical rod as a hinge. Similarly, the upper sash can be pulled down its whole depth as a sash, but when it is pulled down lower than that (the lower sash having been opened inwards first), it gets clear of the parting slip, which is cut off at the level of the meeting rail, and can then also be swung inward as a casement turning on its own vertical rod. The patentees say their window has "every advantage of the French casement, without its defects." We hardly see any defect in the French casement as made and fitted in good French houses, but in smoky towns it has the drawback, when opening inwards, of bringing the dirt and dust clinging to it into the room; and when opening outwards there is the difficulty as to cleaning. Messrs. Wright's window can be ordinarily used, and is apparently intended to be used, as a vertical opening sash window; but it can be swung inside for cleaning as easily as a French casement: and there is no taking to pieces of any kind required; the action is quite simple and always available. Some persons might object to the appearance of the metal bar from top to bottom of the window; but that can hardly be called a very serious objection. As a whole it is one of the best and simplest patent sashes for cleaning that we have seen.

CATTLE MARKET, ISLINGTON.—The Corporation of the City of London have under consideration a scheme for obtaining Parliamentary powers to enable them to dispose upon building leases of a portion—consisting of the sheep lairs and some lands along the north and west frontages of the market area—and to empower the erection at an estimated cost of 30,000*l.* of public abattoirs instead of the private slaughter-houses. The slaughter-houses stand upon ground which was added eleven years ago to the original market area defined by the Acts of 1857-1861. The Islington market was laid out, after J. B. Bunning's plans and designs, at a cost of about 300,000*l.* upon a space of 15 acres in Copenhagen-fields, in lieu of the cattle market in West Smithfield which was abolished in pursuance of a report made by a Commission of Inquiry, 1849, into the Meat Supply of the Metropolis. The new buildings, illustrated in the *Builder* of December 2, 1854, were opened by Albert, Prince Consort, on June 13, 1855. In December, 1896, the Corporation sold for 16,000*l.* to the Islington Vestry two parcels of the surplus lands on the south side for purposes of an open space and recreation ground, covering some 5½ acres; the London County Council contributed to the purchase-moneys. The central clock-tower stands on the site of Copenhagen House, a favourite resort of holiday-makers, which remained until April, 1853, and is depicted in Vol. I. of Hone's "Every Day Book." Copenhagen-fields lay between the ancient bridle-way Hagbush-lane, now Caledonian road, and Maiden-lane, since York-road.

THE ROYAL MINT, 1904.—The thirty-fifth annual report which is just issued contains a large number of illustrations of the new seals and counter seals of the United Kingdom, Scotland, and Ireland, as authorised on the King's accession. These, the counter seal of Scotland excepted, were designed by the late engraver to the Mint, Mr. de Saulles, the wax models being executed by Mr. Frank Bowcher.

HAMPTON-COURT GALLERIES.—The Cartoon Gallery of Hampton Court Palace will be closed during the next three or four weeks for the purpose of the arrangement and erection of a series of valuable tapestries, worked after the Raffaelle cartoons, for exhibition in the Cartoon Gallery. The tapestries are a gift to the nation of Baron d'Erlanger.

ARTIFICIAL SANDSTONE BRICKS.—Mr. Gillies, British Vice-Consul at Barranquilla, Colombia, in his report on the trade and commerce of that port for 1904, mentions that recently a large factory has been established there for the manufacture of artificial sandstone bricks for building purposes. The manufacture of artificial sandstone is a recent German invention in which sand and quicklime are mixed together in certain proportions, the latter hydrated in a mould in which a vacuum is produced, and, as there is no space for expansion of the lime on hydration, the compression of the material follows. The brick is further compressed in stamps of high pressure, and then passed into steam boilers in which a current of steam is kept up for eight or ten hours, causing a chemical combination of the sand and lime and producing hydro-silicate of lime. The lime acts as a binding material or cement, uniting the particles of sand together and producing a brick of great hardness and practically impervious to moisture. This industry promises to be one of the most important of the country, as the supply of raw material is inexhaustible, the geological formation for miles round Barranquilla being coral limestone covered with a stratum of sand varying from 4 ft. to 10 ft. in depth. The factory has a productive capacity of 1,000,000 bricks per month. In addition to the standard size brick, fancy face bricks, coloured fancy tiles for flooring, tiles for roofing, and building material of every description can be supplied. Natural cement of a very good quality is, in many cases, found in the vicinity of the coral limestone.

CHICHESTER CATHEDRAL.—A meeting of the Chichester Cathedral Repair and Restoration General Committee was held at the Royal Pavilion, Brighton, on the 10th inst. In the absence of the Duke of Richmond, the chair was taken by the Bishop, who detailed the steps which had been taken by the sub-Committee appointed to approach the Ecclesiastical Commissioners upon the subject of the further necessary repairs to the capanile and the roof of the cathedral, and referred to the efforts which had been made by the Dean and Chapter during the last sixty years for the repair and restoration of the cathedral, involving an expenditure of no less than 117,000*l*. His lordship read a letter from the Ecclesiastical Commissioners offering to subscribe 500*l*. for the purpose required. The meeting was then addressed by the Dean of Chichester. He stated that in his opinion it would be better to proceed with the restoration of the bell tower in the first instance before attempting to touch the roof of the cathedral, which he thought might remain in its present condition for some time. Mr. Somers Clarke, the consulting architect, then addressed the meeting, and said he believed that 5,000*l*., the amount now asked for, would be sufficient to do what was required. But as everyone was aware, when an ancient building had to be dealt with, it was impossible to say what might be revealed. The experiments with baryta water on the Campanile had proved very successful indeed, and the Committee were now going on applying it to the octagon at the top of the tower. As soon as the north and western turret had been finished and the dry summer which was anticipated permitted the baryta water to be applied, the octagon would be completed. Then there were the new N.E. and the S.E. turrets to be built. The other important work was the repair of the roof, which he thought ought not to be put off for a single day. As soon as the damp got through the lead roof into the gutters it falls into the pockets of the vaulting, collected in a puddle, and went through making stains and marks. Therefore, as the money was collected, it should be set aside in two separate sums, taking, say, two-fifths for the work to the bell tower now in progress, and three-fifths for the roof until there was enough money collected for the roof to pay for doing one whole piece. The Committee could not begin the roof and then wait for money to come in as they did with the bell tower; the structure could not be left open. It would be necessary that the Committee should be able at a certain date, finding there were several hundreds of pounds in hand, to do so much, and then again to do so much more, and so on by pieces, and never to leave any large area of the structure exposed.—After a discussion, it was resolved that the existing Appeal Committee should draw up the necessary appeal to the county for circulation at an early date.

ROYAL SANITARY INSTITUTE.—At an examination in sanitary science as applied to buildings and public works, held in Norwich on July 7 and 8, 1905, one candidate presented himself, Mr. H. S. Denmark (Norwich), to whom a certificate was granted.

HYDE ABBEY.—A representative committee has been formed under the chairmanship of the Mayor of Winchester, with the object of excavating, preserving, and inclosing the remains of the ancient Abbey of Hyde, the burial place of King Alfred, his wife Queen Elswitha, and his son King Edward the Elder. The remains of the abbey are within a short distance of the spot where the fine statue of King Alfred, by Mr. Hamo Thornycroft, R.A., was erected in 1901 to commemorate the 1,000th anniversary of his death; but up to the present time no proper care has been taken for their preservation. King Alfred died in 901, and his body was placed in the Old Minster, but was subsequently removed to the New Minster, which was built shortly after his death. The bodies of the king, his wife, and son were eventually transferred to Hyde Abbey, outside the wall of the city, on its completion in 1110, and finally buried there. In 1538, at the dissolution of the monasteries, Hyde Abbey was given by Henry VIII. to Wriothesley, Earl of Southampton, who lost no time in pulling it down and selling the material. In 1788 the county authorities erected a bridewell on the western portion of the nave. In digging the foundations for this building many objects of interest were found, which were either dispersed or ruthlessly broken up. The bridewell was taken down in 1850, but a row of cottages have since been built in much the same position. The present condition of the site is as follows:—At the east end, where the apse of the church stood, the ground is to a great extent undisturbed, and large portions of the foundations remain. On the south side of the nave stand several cottages. To the west, outside the area of the church, there remain a perpendicular gateway and some portions of the walls. The object of the committee is: (1) To remove the surface soil, the accumulation of centuries, and carefully uncover the foundations; (2) to provide for the safe custody of any relics which may be found; (3) to secure the preservation of such of the remains of the abbey as still exist; (4) to purchase that portion of the site which is not already owned by the corporation; (5) to fence round the entire area of "Hyde Mede." Subscriptions may be sent to the Hon. Treasurer, Mr. Alfred Bowker, Lankhills, Winchester.

THE CHEAP COTTAGES EXHIBITION.—The Duke of Devonshire will open the Cheap Cottages Exhibition at 4 p.m. on Tuesday, July 25th. Those who wish to avail themselves of the special train leaving King's Cross for Letchworth at 2.25 are requested to inform the secretary, Mr. Wilbraham V. Cooper, of their intentions, at 347, Birkbeck Bank-chambers, W.C.

Legal.

DAMAGE TO PROPERTY BY FLOODING.

THE hearing of the case of the Mayor and Corporation of East Ham *v.* the Ilford Gas Co. was concluded before the Lord Chief Justice and a special jury in the King's Bench Division on the 12th inst., an action by the plaintiff to recover damages from the defendants for having, as it was alleged, negligently caused a large quantity of flood water to overflow the plaintiffs' property in June, 1903, from the River Roding and a stream called the Aldersbrook.

The facts were these:—At the time of the commencement of the action the East Ham Urban District Council was the Urban Sanitary Authority for the district, which comprised the parishes of East Ham and Little Ilford, and by a Charter granted in 1904 the district was incorporated as the borough of East Ham, and the property of the district council devolved upon the plaintiffs. The defendants owned and occupied certain lands in the urban sanitary districts of Ilford and East Ham abutting on the river Roding, the Aldersbrook passing through the defendants' lands on which they had erected gas works. Both the Roding and the Aldersbrook were crossed by the Romford-road, which ran east and west on a high bank to the north of the gas works, and was carried over both channels by the bridges. There was also a channel between the Roding and the Aldersbrook parallel to Romford-road and immediately to the north of it. By their special Act defendants were empowered to fill in part of the channel of the Aldersbrook inside their grounds, provided that if they closed any part of it southward from the Romford-road bridge within three years from the passing of the Act (1899) they should maintain, until the Barking-road bridge was reconstructed, a culvert having a diameter of 4 ft. 6 in. from the Aldersbrook to the river Roding through their own lands. The defendants made some changes in the channel of the Aldersbrook within their own grounds, leaving the culvert which was required by the Act; but in August, 1902, they closed up the culvert, but did not close the arches of the bridge carrying the Romford-road over the Aldersbrook. Defendants, also for the purpose of laying gas mains, cut and reinstated with an additional height of 1 ft. the river bank inside their grounds. Defendants also raised the height of the island between the Roding and the Aldersbrook, thus forming a sort of pit where any water would collect that might come under the Romford-road bridge along the Aldersbrook. In June, 1903, in consequence of a heavy rainfall, the water rushed along the Aldersbrook and collected on the defendants' ground by the bank of the Roding, the result being that the bank burst, which caused the damage complained of. The plaintiffs' case was that defendants were liable to maintain in repair the river bank inside their grounds as a protection against flooding, and that it had been weakened by the defendants carrying the gas mains through it and not properly reinstated, and therefore that they were liable for the damage caused by flooding. Defendants denied that they were liable to maintain in repair the river bank and that they had failed to keep their portion of the bank in repair. They also said that if any damage was caused to the plaintiffs it was through the overflow of the Aldersbrook, due to an act of God.

After hearing a great mass of evidence the jury found that the defendants were guilty of negligence or want of reasonable care in closing the Aldersbrook and in reinstating the bank, and that the flooding was caused by both. They also found that the flooding could have been prevented by reasonable care.

On these findings his lordship gave judgment for the plaintiffs, the amount of damages to be assessed by an official referee.

A stay of execution was refused.

Mr. Montague Lush, K.C., Mr. Montague Shearman, K.C., and Mr. L. M. Richards appeared for the plaintiffs; and Mr. Duke, K.C., Mr. Danckwerts, K.C., and Mr. Sylvain Mayer for the defendants.

PATENTS OF THE WEEK.

APPLICATIONS PUBLISHED.*

15,795 of 1904.—E. H. RIETER-BODMIR: *Manufacture of Artificial Stone Pipes, Tiles, etc., and Apparatus Therefor.*

A process for the manufacture of articles such as artificial stone pipes, relief pipes, vessels, and the like, according to which a mixture of asbestos (chrysotile), or some artificial fibrous material reduced to a state of fine division, is incorporated with cement such as Portland cement or other hydraulic binding medium and water in a boiler-like vessel provided with a stirring device, and for the purpose of freeing it from the water, and in order that the fibres may be caused to lie in all directions throughout the mass, the said mixture is subjected to high pressure in a mould made strong enough to resist the pressure, whose walls are provided with holes and which is internally lined wholly or partly with an outer flexible thin metallic plate covered with an inner wire sieve of a fineness of from 150 to 180 meshes per square centimetre.

18,574 of 1904.—H. C. PRUCE: *Telescopic Casements and Similar Stays.*

A telescopic stay for casements and the like, consisting of an outer tubular and slotted member, telescoped by an inner and separable member provided with a detachable screw or the like traversing the said slot and serving as a means for preventing the separation of the members when in use, the said inner member being of such a section that it fills up the bore of the tubular member or outer sleeve, means being also provided for clamping or securing the said members in the adjusted position, the said outer member being made from open jointed tubing and its ends are secured into pummels or fittings whose edges constitute stops for the opposite ends of the slot which is formed by the said open joint, and is traversed by the detachable pin or stud of the inner member.

24,912 of 1904.—C. ROSENHEIM: *Means for Operating and Securing Windows.*

Apparatus for operating windows comprising a screw supported horizontally at a convenient height and a nut mounted on the said screw and adapted to engage one arm of a pivoted bell crank lever, the other arm of which imparts to the operating rod a vertical movement parallel to the window, means for automatically bolting the window comprising a lever pivoted above the operating rod and provided with a slot with an inclined portion in which travels a pin fixed to the operating rod so that the pressure of said pin against the inclined portion of the slot will cause said lever to turn about its pivot and operate a bolt to which it is secured at the end of a recessed guide provided with a spring and regulating the movement of the bolt when opening and closing the window.

* All these applications are in the stage in which opposition to the grant of Patents upon them can be made.

694 of 1905.—R. S. GODSON: *Means for Plugging the Outlet Pipes of Cisterns.*

This invention relates to means removable at will for plugging the outlet pipes of cisterns and has for its object to obviate the present necessity of emptying a cistern and thus wasting water, or of resorting to the present method of a plumber having to thrust his arm into the water to cork or plug up the outlet pipe when anything is to be done to the taps or pipes supplied by the cistern. The invention consists in a portable tool or plug which may be carried by the plumber for use when required.

1,457 of 1905.—T. J. ARMSTRONG: *Process in the Manufacture of Keen's or Other Cements Having a Gypsum Base.*

This invention relates to the manufacture of cement of that class which have a gypsum base together with a small quantity of some supplementary salt. In carrying the invention into effect raw gypsum is taken in a fairly dry state and reduced to powder. This powder is then sufficiently moistened with a solution of the supplementary salt to be used, each particle thus becoming covered. The damp mass thus obtained is then formed into cakes or briquettes in a press. These cakes are then calcined in the same manner as raw lump gypsum and subsequently again reduced to a powder which constitutes the cement.

2,427 of 1905.—A. H. TILTMAN: *Construction of Walls.*

An L-shaped facing brick having the upper and lower faces of the main portion of the brick and of the extending portion parallel to each other and the front and rear faces of the brick and extending portion parallel to each other with grooves arranged within said faces and around the top, bottom, and sides of the main portion and extending portions of the brick.

7,385 of 1905.—J. ASHMORE: *Dampers for Chimneys, Flues, and Like Purposes.*

This invention relates to dampers for chimneys, flues, and like purposes and has for its object to construct such in a more effective manner than those now in use. In constructing a damper according to the invention upon the damper plate are cast or secured runners of V or half-round section which work in corresponding grooves in the damper case secured in the flue. By this means the passage of steam and smoke is prevented up the chimney when the damper is closed. In the event of dampers so made becoming warped owing to the action of the heat the runners remain in contact with their grooves at either the side or the bottom of such, thus effectively sealing the flue.

7,886 of 1904.—A. BRANCART and E. MICHOTTE: *Machines for Making Tiles for Lining Purposes, with Holding Hooks.*

A press for moulding tiles, made of vitrified material, with catches on one side and a lustrous face on the other, composed of a table to carry any desired number of moulds, these moulds being closed on top by a lifting-plate which makes the smooth face, while on the bottom there is a hollow plate for water circulation, lifting vertically, and forming the impressed face of the tile, this press being arranged in such a way as to permit of the casting of the material in a fluid condition, and the removal of the tile from the mould horizontally, after it has been sufficiently cooled.

19,737 of 1904.—A. J. BOULT (HULSBERG & Co.) *Impregnation of Wood and Other Porous Materials.*

The materials or substances to be impregnated are brought under atmospheric pressure into a room and are then exposed to the influence of the liquid having a pressure of one or more atmospheres. The surplus of the impregnating liquid is thereupon allowed to run off, and the impregnating apparatus, is put under vacuum, the result being that a large part of the impregnating liquid that penetrates into the cells, or pores during the process of impregnation, is expelled by the expansion of the air contained in the cells and compressed during the process of the impregnation.

1,812 of 1905.—J. C. BAYLES: *Pavings or the Like, Composed of Plastic Material.*

This invention relates to road surfaces, and other surfaces made from material which is plastic at the time of construction and has for its object to correct defects which exist in pavings and other surfaces of material laid in a plastic condition. In carrying out the invention as applied to roadways, street surfaces, etc., laid with asphalt or other bituminous material, the grilles are prepared by binding flexible strips or ribbons of iron or steel into the form best adapted to accomplish the objects immediately in view, the strips or ribbons of iron or steel being made of such thickness and width as the traffic and other conditions may require. For asphalt street paving subject to normal ordinary traffic the grilles are of strips or ribbons, of iron or steel about 1 in. wide and about ⅛ in. thick, each long enough to form from one piece by binding, edge up, a grille covering a superficial area of about 12 in. square.

5,469 of 1904.—J. VINDEN: *Apparatus for Melting Asphalt.*

This invention relates to apparatus for melting asphalt to prepare it for laying, and has for its object to provide an apparatus of this class in which the heat shall be utilised to better advantage than those hitherto, with a resulting economy of fuel, and more rapid melting of the asphalt. According to the invention the apparatus comprises a furnace, a shell, and a cauldron supported in the shell above the furnace and so constructed that the hot gases or products of combustion are caused to sweep over the top as well as the sides and bottom of the cauldron before reaching the outlet or chimney. The apparatus also comprises a support for the fire bars adapted to admit air to the fuel to promote combustion.

SOME RECENT SALES OF PROPERTY:

ESTATE EXCHANGE REPORT.

June 22.—By R. & J. R. MITCHELL (at Whitehaven).

Beckermet, Cumberland.—"Petersburgh Estate," 182 a. 2 r. 22 p., f.	£8,000
Halle, Cumberland.—A common allotment	100
Irton, Cumberland.—"Moorgate Farm," 145 a. 1 r. 18 p., f.	2,000

June 22 and 23.—By WALTON & LEE (at Frome).

Marston Biggott, etc., Somerset.—"The Marston Estate," 3,354 a., f. (in numerous lots)	120,000

June 23.—By FAREBROTHER, ELLIS, & Co. (at Ramsgate).

Ramsgate, Kent.—Ellington Pk.-rd., etc., twelve freehold building plots	920

June 24.—By HAMPTON & SONS (at Oxted).

Oxted, Surrey.—A freehold building site, 17 a. 2 r. 16 p.	3,500

June 26.—By FAREBROTHER, ELLIS, & Co. (at Kingston).

Kingston, Surrey.—King's-rd., etc., twenty freehold building plots	1,760

By CECIL HOBDAY (at Putney).

Putney.—100, Clarendon-rd., u.t. 93 yrs., g.r. 6*l.* 10s., e.r. 50*l.*	630

June 28.—By ALFRED RICHARDS (at Tottenham).

Tottenham.—61, Baronet-rd., f., e.r. 28*l.*	340

June 29.—By J. M. LEEDER & SONS (at Llanelly).

Pontyberem, Carmarthen.—The "Star Inn," y.r. 25*l.*; also three cottages and old post-office adjoining, f.	1,200

July 1.—By WRIGHT & SCUBY (at Cambridge).

Burwell, Cambs.—Various enclosures of pasture and fen land, 134 a. 0 r. 31 p., f. and c. (in lots)	778

By HENRY DUKE & SON (at Dorchester).

Corscombe, etc., Dorset.—"Pipsford Farm," 272 a. 3 r. 12 p., f., y.r. 235*l.*	4,200

July 3.—By W. BRADBEAR & SON.

Canonbury.—8, Balfour-rd., u.t. 44 yrs., g.r. 6*l.* 6s., e.r. 48*l.*	435
74, Marquess-rd., u.t. 40½ yrs., g.r. 5*l.*, e.r. 65*l.*	595

By DOWSETT, KNIGHT, & Co.

Islington.—47, 49, 51, and 53, Ockendon-rd., u.t. 36 yrs., g.r. 23*l.*, y.r. 156*l.*	1,210

By EDWIN EVANS.

Cheshunt, Herts.—Crossbrook-st., "The Grange," and 2 a., y.r. 141*l.* 5s.; also "Springfield" (adjoining) and ¼ of an acre, y.r. 46*l.*, f.	5,500

By CECIL HOBDAY.

Streatham.—41, 43, 45, 47, 50, 52, and 54, Pathfield-rd., u.t. 90½ yrs., g.r. 44*l.* 2s., y.r. 240*l.*	2,050

By TUCKETT & SON.

Southend-on-Sea, Essex.—The "Castle Hotel," c.	7,000
Danbury Hill, Essex.—The "Griffin Hotel" and 2 a. 2 r. 30 p., f.	2,325
Rayleigh, Essex.—The "Golden Lion Hotel," f.	3,050
The "Paul Pry Inn," c.	1,200
Great Wakering, Essex.—The "Bell Inn," f.	2,600
Canvey Island, Essex.—The "Lobster Smack," p.h. f.	2,300
East Hanningfield, Essex.—The "Windmill Inn" and 0 a. 3 r. 10 p., c.	1,400
High-rd., three copyhold enclosures, 11 a. 1 r. 20 p.	180
Bradwell-on-Sea, Essex.—The "Green Man" p.h. and 1 a. 1 r. 10 p., f.	2,075
Tillingham-rd., a plot of building land," f.	150
Southminster, Essex.—High-st., the "Rose and Crown Hotel" and 0 a. 2 r. 30 p., c.	1,800
King's-rd., copyhold building land, 1 a. 1r. 0 p.	200

By J. D. WOOD & Co.

Attleborough, Norfolk.—"Little Ellingham Hall Estate," 526 a. 0 r. 16 p., f.	8,350

By SIMMONS & SONS (at Newbury).

Shefford, Berks.—"South Hidden" and "Fisher's" Farms, 529 a. 3 r. 28 p., f.	4,500
"Shefford-pk" and "Templers" Farms, 384 a. 3 r. 3 p., f.	2,500
Freehold residential site, 80 a. 0 r. 9 p.	1,050
Enclosure of land, 120 a. 1 r. 9 p., f.	1,000
Shop and premises, area 1 a., f., y.r. 12*l.*	300
"Northfield Farm," 331 a. 1 r. 2 p., f.	2,225
Blacksmith's shop, cottage, etc., f., y.r. 7*l.* 10s.	220
Two freehold holdings, 3 a. 1 r. 22 p., y.r. 31*l.* (one with fishing rights)	605
Residence, farmery, two cottages, and 2 a. 2 r. 18 p., f.	380
Freehold shop, residence, and 0 a. 3 r. 9 p., y.r. 10*l.*	220
Shefford Mill and 5 a. 0 r. 27 p., f.	900
Freehold enclosure, 5 a. 1 r. 30 p.	160
Two cottages, shop, etc., 0 a. 3 r. 10 p., f.	150
Sixteen freehold cottages	1,220

By MORGAN, BAINES, & CLARK.

Carshalton, Surrey.—Park Hill, "Elvetham," f., y.r. 65*l.*	£750

By ALFRED RICHARDS.

Tottenham.—680 and 682, High-rd. (s.), f.	1,830
145 and 147, Northumberland-pk., f., y.r. 62*l.*	1,035
Waltham Abbey, Essex.—Eleanor Cross-rd., freehold building land, 5 a. 3 r. 3 p., p.	1,400

By ROBINS & HINE.

Hornsey.—40 and 42, Sydney-rd., f., y.r. 62*l.*	895
2, Windermere-villas, u.t. 85½ yrs., g.r. 4*l.* 10s., e.r. 48*l.*	455
Bow.—3, Gainsborough-rd., u.t. 34½ yrs., g.r. 3*l.* 5s., y.r. 30*l.*	260
Hounslow, Middlesex.—Hibernia-rd., "The Hanworth-road Nursery," area 2 a. 0 r. 37 p., c., y.r. 32*l.*	700

July 4.—By W. BRACKETT & SONS.

Beckenham, Kent.—37, Barnmead-rd., u.t. 70 yrs., g.r. 6*l.* 10s., y.r 40*l.*	360

By DAVID BURNETT & Co.

Stamford Hill.—Ferndale-rd., etc., two plots of freehold building land	2,642
Tottenham.—Gladesmore-rd., f.g. rents 180*l.*, reversion in 73 yrs.	4,335
Lealand-rd., f.g. rents 96*l.*, reversion in 73 yrs.	2,415
High-rd., f.g. rents 37*l.* 16s., reversion in 73 yrs.	1,010
Belton-rd., "The Belton Stores," u.t. 96 yrs., g.r. 16*l.*, y.r. 40*l.*	345
18, Beaconsfield-rd., u.t. 71 yrs., g.r. 6*l.*, e.r. 30*l.*	225

By J. W. COADE.

Holloway.—61, Cromwell-rd., u.t. 60 yrs., g.r. 1*l.*, w.r. 28*l.* 12s.	150

By DEBENHAM, TEWSON, & Co.

Kennington.—139, Upper Kennington-la., c., p.	400

By HAMPTON & SONS.

Northwood, Herts.—"Tower Dene" and 2½ a., f.	3,450

By WALTON & LEE.

Kensington.—20, Kensington Gdn.-ter., u.t. 28 yrs., g.r. 12*l.* 10s., y.r. 190*l.*	1,830

By WESTON & SONS.

Brixton.—9, 11, and 13, Crawshay-rd., u.t. 58 yrs., g.r. 15*l.* 15s., y.r. 96*l.*	970

By WYER, ADAMS, & GLOVER.

Tottenham.—758, Seven Sisters-rd., f., p.	700

By STEPHENSON & ALEXANDER (at Chepstow).

Wolvesnewton, etc., Monmouth.—"The Wolvesnewton Estate," 1,672 a. 2 r. 25 p., f. (in lots)	15,000
Llangwm Ucha, etc., Monmouth.—"Cefn Gola Farm," 42 a. 3 r. 33 p., f.	775
Wolvesnewton, Monmouth.—"Mynydd Bach Farm," 18 a. 3 r. 12 p., f.	575

By H. & R. L. COBB (at Rochester).

Higham, Kent.—London-rd., eight enclosures, 43 a. 3 r. 23 p., f.	2,750
"Higham Hill Farm," 48 a. 0 r. 35 p., f., y.r. 45*l.*	3,150
Cliffe, Kent.—Two enclosures of pasture, 11 a. 3 r. 15 p., f.	280
Queenborough, Kent.—Sittingbourne-rd., a block of freehold land, 15 a. 1 r. 25 p.	900
Sittingbourne-rd., three enclosures of pasture, 21 a. 0 r. 13 p., f.	1,125

By R. DONKIN & SON (at Newcastle).

Warkworth, Northumberland.—"Amble Hope House" and farm, 362½ acres, f., y.r. 300*l.*	5,500
"The North Links," 57 acres, f.	330
"The East and West Garth," 1 a. 0 r. 17 p., f.	620

July 5.—By D. SMITH, SON, & OAKLEY.

West Lavington, Wilts.—"West Lavington House Estate," 2,506 a. 2 r. 24 p.	32,500
"The Lodge," 13 a. 3 r. 12 p., f., e.r. 123*l.*	2,750
Ten freehold cottages and 2 a. 3 r. 14 p.	500
House, five cottages, and 0 a. 1 r. 33 p., f.	300

By BAXTER, PAYNE, & LEPPER.

Beckenham.—Wickham-rd., "Chilchester Lodge" and nearly 1 acre, f., y.r. 70*l.*	1,310
Wickham-rd. "Burrell Lodge," two cottages and nursery ground, f., y.r. 100*l.* 8s.	1,410
West Wickham, Kent.—Wickham Green, a parcel of building land with two cottages thereon, f.	500
Beckenham.—Chancery-la., f.g.r. 32*l.*, reversion in 40½ yrs.	895

By ALLAN BOOTH.

Holloway.—110, Sussex-rd., u.t. 47 yrs., g.r. 5*l.* 5s., e.r. 40*l.*	345

By PERCIVAL HODSON.

Hampstead-road.—10, Barnby-st., u.t. 37 yrs., g.r. 8*l.*, y.r. 55*l.*	490

By J. J. KELF.

Finchley.—20 to 42 (even), Brackenbury-rd., u.t. 97 yrs., g.r. 50*l.* 8s., w.r. 327*l.* 12s.	2,220
Leytonstone.—49, Pretoria-rd., f., y.r. 30*l.*	255
Walthamstow.—23, Melville-rd., u.t. 88½ yrs., g.r. 5*l.*, w.r. 31*l.* 4s.	200

By NASH, SON, & Co (at Royston).

Therfield, Herts.—'Hoborn Farm," 107 a. 3 r. 22 p., f., y.r. 60*l.*	1,070

By W. H. TAMPLIN (at Bridgwater).

North Petherton, Somerset.—"Willstock Farm," 135 a. 1 r. 19 p., f.	6,500

July 6.—By H. J. BLISS & SONS.

Victoria-park.—63 and 64, Gore-rd., u.t. 49 yrs., g.r. 14*l.*, y.r. 85*l.*	905
Clapton.—143 and 145, Elderfield-rd., u.t. 73 yrs., g.r. 10*l.*, w.r. 68*l.* 18s.	450
Tottenham.—Arnold-rd., builder's yard and workshop," f., e.r. 26*l.*	100

By GRAVES & SON.

Bayswater.—20, Durham-ter., u.t. 43½ yrs., g.r. 12*l.*, e.r. 85*l.*	610

July 6.—By C. MANDELL.

Barnsbury.—3, 5, and 7, Crossley-st., u.t. 76 yrs., g.r. 21*l.*, y.r. 120*l.*	1,200
2 and 4, Warner-st., u.t. 54 yrs., g.r. 16*l.*, y.r. 84*l.*	800
Limehouse.—Garrick Buildings, f.g.r. 20*l.*, reversion in 89 yrs.	400

By C. C. & T. MOORE.

Kingsland.—44, Church-rd., u.t. 10¼ yrs., g.r. 4*l.* 10s., y.r. 40*l.* £235
Bethnal Green.—31, Strahan-rd., u.t. 45½ yrs., g.r. 5*l.* 10s., w.r. 39*l.* 250
Victoria Park.—28 and 30, Bandon-rd., u.t. 54½ yrs., g.r. 5*l.* 6s., w.r. 52*l.* 400
Hoxton.—19, Harman-st., u.t. 37 yrs., g.r. 6*l.*, y.r. 45*l.* 340

By W. G. PINHORN.

Walworth.—1, Hewson-st., u.t. 37½ yrs., g.r. 5*l.*, w.r. 54*l.* 12s. 345

By W. STEVENS.

Stamford Hill.—41, Ferndale-rd., u.t. 73½ yrs., g.r. 6*l.*, w.r. 46*l.* 16s. 230
Victoria Park.—118, Sewardstone-rd. (s.), u.t. 49 yrs., g.r. 6*l.*, y.r. 36*l.* 400
Dalston.—117, 119, and 121, Holly-st., w.r. 81*l.* 18s., also i.g.r. 25*l.*, u.t. 12 yrs., gr. 34*l.* 150
33a, Middleton-rd., u.t. 53 yrs., g.r. 8*l.* 8s., y.r. 40*l.* 300
206, Richmond-rd., u.t. 36 yrs., g.r. 5*l.*, e.r. 42*l.* 400
Hackney.—179, Graham-rd., u.t. 51 yrs., g.r. 8*l.*, p. 450
Homerton.—3 and 5, Templar-rd., u.t. 55 yrs., g.r. 12*l.*, w.r. 62*l.* 8s. 305

By STIMSON & SONS.

Bethnal Green.—James-st., "The Woolpack" b.h.; also 43, Ann-st., f., y.r. 50*l.* 1,500
Woolwich.—Sand-st., "The Ordnance Arms" b h., f., y.r. 60*l.* 1,850
Holloway.—1 to 9 (odd), Hilton-rd., u.t. 47 yrs., g.r. 10s., y.r. 208*l.* 2,040
Hilldrop-cres., i.g.r. 18*l.*, u t. 48 yrs., g.r. 7*l.* 170
Crane-gr., i.g.r. 12*l.*, u.t. 46 yrs., g.r. 4*l.* 120
Kentish Town.—Hampshire-st., i.g.r. 55*l.*, u.t. 38¾ yrs., g.r. 5*l.* 700
Brixton.—17, 18, and 19, Claribel-rd., u.t. 8¾ yrs., g.r. 15*l.* 9s., y.r. 96*l.* 310
Hackney.—215. 217, and 219, Cassland-rd.; 17 to 23 (odd), Selman-st., u.t. 47½ yrs., g.r. 28*l.*, w r. 179*l.* 8s. 700
14 to 20 (even) Selman-st., u.t. 46 yrs., g.r. 18*l.*, w.r. 88*l.* 8s. 340
Poplar.—26, Willis-st., f., w.r. 22*l.* 2s. 170
Rotherhithe.—81, Reculver-rd. (s.), u.t. 65½ yrs., g.r. 6*l.* 10s., w.r. 33*l.* 16s. 170
Merton.—214 and 216, Kingston-road and land adjoining, f. 1,000
Church-la.. "Suttons Cottages" (2), f. 400
Cannon Hill-la., a freehold field, 4 a. 1 r. 13 p. 400
Kennington.—St. Oswald's-pl., f g. rents 24*l.*, reversion in 77 yrs. 565
Brixton.—9 and 11, Crowhurst-rd., u.t. 53 yrs., g r. 8*l.*, y.r. 96*l.* 890
Wimbledon.—1 and 3, Leopold-rd., u t. 92½ yrs., g.r. 21*l.*, e.r. 150*l.* 1,200
15 and 28, Bernard-gdns., u.t. 92½ yrs., g r. 16*l.* 16s., y.r. 110*l.* 1,100
Ealing.—2, 4, 6, and 8, Green-av., u.t. 97 yrs., g.r. 18*l.*, w.r. 109*l.* 4s. 440

By T. BANNISTER & CO. (at Brighton).

Hurstpierpoint, Sussex.—"Hornes" (farmhouse) and 38 acres, f., p. 1,700
"Blackhouse" and "Naldretts" (farmhouses), and 168 acres, f., p. 4,400
"Naldretts Cottage" and 12 a. 0 r. 30 p., f., p. 600

July 7.—By D. J. CHATTELL & SONS.

Wandsworth.—25, 27, 29, and 31, Lavenham-rd., u.t. 95 yrs., g.r. 22*l.*, w.r. 134*l.* 2s. .. 900

By HARDS & BRADLY.

Bermondsey.—58 to 61 (odd). Rolls-rd., u.t. 41½ yrs., g.r. 25*l.*, w.r. 182*l.* 1,175

By WINDRUM & CLEAVE.

Poplar.—1, 2, and 3, Vulcan-st., f., w.r. 46*l.* 16s. 380
Castor-st., a freehold plot with stable..... 180
62 and 64, Brunswick-st., u.t. 42 yrs., g r. 7*l.*, w.r. 67*l.* 12s. 420
Forest Gate.—5a and 5b, Horace-rd., u.t. 97 yrs., g.r. 10*l.*, w.r. 61*l.* 395

By WESTMORE & YOUNG.

Kennington.—71, Lower Kennington-la., and 10 and 11, Lyric-pl., f., y.r. 90*l.* 12s. 1,585
24, Kennington-ter., u.t. 15½ yrs., g.r. 9*l.*, e.r. 50*l.* 160
Camberwell.—5, 6, and 7, Listowel-st., u.t 56 yrs., g.r. 13*l.* 10s., w.r. 93*l* 12s. 700

Contractions used in these lists.—F.g.r. for freehold ground-rent; l.g.r. for leasehold ground-rent; i.g.r. for improved ground-rent; g.r. for ground-rent; r. for rent; f. for freehold; c. for copyhold; l. for leasehold; p. for possession; e.r. for estimated rental; w.r. for weekly rental; q.r. for quarterly rental; y.r. for yearly rental; u.t. for unexpired term; p.a. for per annum; yrs. for years; la. for lane; st. for street; rd. for road; sq. for square; pl. for place; ter. for terrace; cres. for crescent; av. for avenue; gdns. for gardens; yd. for yard; gr. for grove; b.h. for beerhouse; p.h. for public-house; o. for offices; s. for shops; ct. for court.

MEETINGS.

FRIDAY, JULY 14.

Incorporated Association of Municipal and County Engineers.—South Wales District Meeting, to be held at Swansea.

SATURDAY, JULY 15.

Incorporated Association of Municipal and County Engineers.—Swansea Meeting (concluded).

WEDNESDAY, JULY 19, TO TUESDAY, JULY 25.

Royal Institute of Public Health.—London Congress (King's College and Regent-street Polytechnic).

WEDNESDAY, JULY 19.

Builders' Foremen and Clerks of Works' Institution.—Half-yearly Meeting of the Members. 8 p.m.

Institute of Sanitary Engineers, Ltd.—Examination and Literary Committee. 3.30 p.m. Finance Committee. 5 p.m.

SATURDAY, JULY 22.

Northern Architectural Association.—Annual Excursion—Barnard Castle and Raby Castle.

SATURDAY TO MONDAY, JULY 29-31.

Institute of Sanitary Engineers, Ltd.—Summer Outing, to Southampton.

TO CORRESPONDENTS.

NOTE.—The responsibility of signed articles, letters, and papers read at meetings rests, of course, with the authors.

We cannot undertake to return rejected communications; and the Editor cannot be responsible for drawings, photographs, manuscripts, or other documents, or for models or samples, sent to or left at this office, unless he has specially asked for them.

Letters or communications (beyond mere news items) which have been duplicated for other journals are NOT DESIRED.

All communications must be authenticated by the name and address of the sender whether for publication or not. No notice can be taken of anonymous communications.

We are compelled to decline pointing out books and giving addresses.

Any commission to a contributor to write an article, or to execute or lend a drawing for publication, is given subject to the approval of the article or drawing, when received, by the Editor, who retains the right to reject it if unsatisfactory. The receipt by the author of a proof of an article in type does not necessarily imply its acceptance.

All communications regarding literary and artistic matters should be addressed to THE EDITOR; those relating to advertisements and other exclusively business matters should be addressed to THE PUBLISHER, and *not* to the Editor.

PRICES CURRENT OF MATERIALS.

*** Our aim in this list is to give, as far as possible, the *average* prices of materials, not necessarily the lowest. Quality and quantity obviously affect prices—a fact which should be remembered by those who make use of this information.

BRICKS, &c.

	£ s. d.	
Hard Stocks	1 10 0	per 1000 alongside, in river.
Rough Stocks and Grizzles	1 6 6	" " "
Facing Stocks ...	2 2 0	" " "
Shippers	2 2 0	" " "
Flettons	1 7 0	" at railway depôt.
Red Wire Cuts ...	1 14 0	" " "
Best Fareham Red	3 12 0	" " "
Best Red Pressed Ruabon Facing	5 0 0	" " "
Best Blue Pressed Staffordshire ...	4 2 6	" " "
Do. Bullnose	4 7 6	" " "
Best Stourbridge Fire Bricks.....	4 0 0	" " "
GLAZED BRICKS.		
Best White and Ivory Glazed Stretchers	12 0 0	" " "
Headers	11 0 0	" " "
Quoins, Bullnose, and Flats.....	16 0 0	" " "
Double Stretchers	19 0 0	" " "
Double Headers...	16 0 0	" " "
One Side and two Ends	19 0 0	" " "
Two Sides and one End	20 0 0	" " "
Splays, Chamferred, Squints	20 0 0	" " "
Best Dipped Salt Glazed Stretchers, and Header	12 0 0	" " "
Quoins, Bullnose, and Flats.....	14 0 0	" " "
Double Stretchers	15 0 0	" " "
Double Headers...	14 0 0	" " "
One Side and two Ends	15 0 0	" " "
Two Sides and one End	15 0 0	" " "
Splays, Chamferred, Squints	14 0 0	" " "
Second Quality White and Dipped Salt Glazed	2 0 0	" less than best.

	s. d.	
Thames and Pit Sand.....	7 0	per yard, delivered.
Thames Ballast.....	5 9	" "
Best Portland Cement	27 0	per ton, "
Best Ground Blue Lias Lime	20 0	" "

NOTE.—The cement or lime is exclusive of the ordinary charge for sacks.

Grey Stone Lime.....12s. 0d. per yard, delivered.
Stourbridge Fireclay in sacks 27s. 0d. per ton at rly. dpt.

STONE.

	s. d.	
BATH STONE—delivered on road waggons, Paddington Depôt	1 6½	per ft. cube.
Do. do. delivered on road waggons, Nine Elms Depôt	1 8½	" "
PORTLAND STONE (20 ft. average)—Brown Whitbed, delivered on road waggons, Paddington depôt, Nine Elms depôt, or Pimlico Wharf...	2 1	" "
White Basebed, delivered on road waggons, Paddington depôt, Nine Elms depôt, or Pimlico Wharf...	2 2½	" "

	s. d.	
Ancaster in blocks	1 11	per ft. cube, deld. rly. depôt.
Beer "	1 6	" "
Greenshill "	1 10	" "
Darley Dale in blocks...	2 4	" "
Red Corsehill "	2 5	" "
CloseburnRedFreestone	2 0	" "
Red Mansfield "	2 4	" "

YORK STONE—*Robin Hood Quality.*

Scappled random blocks	2 10	" "
6 in. sawn two sides landings to sizes (under 40 ft. super.)	2 3	per ft. super. "
6 in. rubbed two sides ditto, ditto	2 6	" "
3 in. sawn two sides slabs (random sizes)	0 11½	" "

STONE (*continued*).

YORK STONE—*Robin Hood Quality* (*continued*).

2 in. to 2½ in. sawn one side slabs (random sizes)	0 7½	per ft. spr., deld. rly. depôt.
1½ in. to 2 in. ditto, ditto	0 6	" "

HARD YORK—

Scappled random blocks	3 0	per ft. cube, "
6 in. sawn two sides, landings to sizes (under 40 ft. super.)	2 8	per ft. super. "
6 in. rubbed two sides ditto	3 0	" "
3 in. sawn two sides (slabs random sizes)	1 2	" "
4 in. self-faced random flags	0 5	" "

	s. d.	
Hopton Wood (Hard Bed) in blocks	2 0	per ft. cube. deld. rly. depôt.
" " " 6 in. sawn both sides landings	2 7	per ft. super. deld. rly. depôt.
" " " 3 in. sawn both sides random slabs.....	1 0	" "
" " " 2 in. do.	0 8½	" "

SLATES.

in. in.	£ s. d.	
20 × 10 best blue Bangor	13 2 6	per 1000 of 1200 at r. d.
20 × 12 " "	13 17 6	" "
20 × 10 first quality "	13 0 0	" "
20 × 12 " " "	13 15 0	" "
16 × 8 " " "	7 5 0	" "
20 × 10 best blue Portmadoc	12 12 6	" "
16 × 8 " "	6 12 6	" "
20 × 10 best Eureka unfading green .	15 17 6	" "
20 × 12 " "	18 7 6	" "
18 × 10 " "	13 5 0	" "
16 × 8 " "	10 5 0	" "
20 × 10 permanent green	11 12 6	" "
18 × 10 " "	9 12 6	" "
16 × 8 " "	6 12 6	" "

TILES.

	s. d.	
Best plain red roofing tiles .	42	0 per 1000 at rly. depôt.
Hip and Valley tiles ...	3	7 per doz. " "
Best Brosely tiles.....	50	0 per 1000 " "
Do. Ornamental tiles	52	6 " " "
Hip and Valley tiles ...	4	0 per doz. " "
Best Ruabon red, brown, or brindled do. (Edwards)	57	6 per 1000 " "
Do. Ornamental do	60	0 " " "
Hip tiles	4	0 per doz. " "
Valley tiles	3	0 " " "
Best Red or Mottled Staffordshire do. (Peakes).....	51	9 per 1000 " "
Do. Ornamental do.....	54	6 " " "
Hip tiles	4	1 per doz. " "
Valley tiles	3	8 " " "
Best "Rosemary" brand plain tiles.....	48	0 per 1000 " "
Best Ornamental tiles	50	0 " " "
Hip tiles	4	0 per doz. " "
Valley tiles	3	8 " " "
Best "Hartshill" brand plain tiles, sand faced.	50	0 per 1000 " "
Do. pressed.....	47	6 " " "
Do. Ornamental do	50	0 " " "
Hip tiles	4	0 per doz. " "
Valley tiles	3	6 " " "

WOOD.

BUILDING WOOD.	At per standard. £ s. d.	£ s. d.
Deals: best 3 in. by 11 in. and 4 in. by 9 in. and 11 in	13 10 0	15 0 0
Deals: best 3 by 9.....	13 0 0	14 0 0
Battens: best 2½ in. by 7 in. and 3 in., and 3 in. by 7 in. and 8 in.	11 0 0	12 0 0
Battens: best 2½ by 6 and 3 by 6 ..	0 10 0	less than 7 in. and 8 in.
Deals: seconds	1 0 0	less than best.
Battens: seconds	0 10 0	" " "
2 in. by 4 in. and 2 in. by 6 in....	9 0 0	10 0 0
2 in. by 4½ in. and 2 in. by 5 in....	8 10 0	9 10 0
Foreign Sawn Boards—		
1 in. and 1½ in. by 7 in.	0 10 0	more than battens.
¾ in.	1 0 0	"

	At per load of 50 ft.	
Fir timber: best middling Danzig or Memel (average specification)	4 10 0	5 0 0
Seconds	4 0 0	4 10 0
Small timber (8 in. to 10 in.) ...	3 12 6	3 15 0
Small timber (6 in. to 8 n.)	3 0 0	3 10 0
Swedish balks	2 10 0	3 0 0
Pitch-pine timber (30 ft. average)	3 5 0	3 15 0

JOINERS' WOOD.	At per standard.	
White Sea: first yellow deals, 3 in. by 11 in	24 0 0	25 0 0
3 in. by 9 in.	22 0 0	23 0 0
Battens, 2½ in. and 3 in. by 7 in.	16 10 0	18 0 0
Second yellow deals, 3 in by 11 in.....	18 10 0	20 0 0
" " 3 in. by 9 in.	17 10 0	19 0 0
Battens, 2½ in. and 3 in. by 7 in.	13 10 0	14 10 0
Third yellow deals, 3 in. by 11 in. and 9 in.	13 10 0	15 0 0
Battens, 2½ in. and 3 in. by 7 in.	11 0 0	12 0 0
Petersburg: first yellow deals, 3 in. by 11 in.	21 0 0	22 10 0
Do. 3 in. by 9 in.....	18 0 0	19 10 0
Battens.....	13 10 0	15 0 0
Second yellow deals, 3 in. by 11 in.	16 0 0	17 0 0
Do. 3 in. by 9 in.....	14 10 0	16 0 0
Battens.....	11 0 0	12 10 0
Third yellow deals, 3 in. by 11 in.	13 0 0	14 0 0
Do. 3 in. by 9 in.....	12 10 0	14 0 0
Battens.....	10 0 0	11 0 0
White Sea and Petersburg :—		
First white deals, 3 in. by 11 in.	14 10 0	15 10 0
" " 3 in. by 9 in.	13 10 0	14 10 0
Battens	11 0 0	12 0 0
Second white deals, 3 in. by 11 in.	13 10 0	14 10 0
" " 3 in. by 9 in.	12 10 0	13 10 0
" " battens	10 0 0	11 0 0

WOOD (*continued*).

	At per standard.					
JOINERS' WOOD (*continued*).	£	s.	d.	£	s.	d.
Pitch-pine: deals	16	10	0	20	0	0
Under 2 in. thick extra	0	10	0	1	0	0
Yellow Pine—First, regular sizes	44	0	0	upwards.		
Oddments	32	0	0	,,		
Seconds, regular sizes	33	0	0	,,		
Yellow Pine oddments	28	0	0	,,		
Kauri Pine—Planks, per ft. cube	0	3	6	0	5	0
Danzig and Stettin Oak Logs—						
Large, per ft. cube	0	3	0	0	3	6
Small ,, ,,	0	2	6	0	2	9
Wainscot Oak Logs, per ft. cube	0	5	0	0	5	6
Dry Wainscot Oak, per ft. sup. as inch	0	0	8	0	0	9
¾ in. do. do.	0	0	7		—	
Dry Mahogany—Honduras, Tabasco, per ft. super. as inch	0	0	9	0	1	0
Selected, Figury, per ft. sup. as inch	0	1	6	0	2	6
Dry Walnut, American, per ft. sup. as inch	0	0	10	0	1	0
Teak, per load	17	0	0	22	0	0
American Whitewood Planks, per ft. cube	0	4	0	0	5	0
Prepared Flooring, etc.—						
1 in. by 7 in. yellow, planed and shot	Per square. 0	13	6	0	17	6
1 in. by 7 in. yellow, planed and matched	0	14	0	0	18	0
1¼ in. by 7 in. yellow, planed and matched	0	16	0	1	0	0
1 in. by 7 in. white, planed and shot	0	12	0	0	14	6
1 in. by 7 in. white, planed and matched	0	12	6	0	15	0
1¼ in. by 7 in. white, planed and matched	0	15	0	0	16	6
¾ in. by 7 in. yellow, matched and beaded or V-jointed brds.	0	11	0	0	13	6
1 in. by 7 in. do. do.	0	14	0	0	18	0
¾ in. by 7 in. white do. do.	0	10	0	0	11	6
1 in. by 7 in. do. do. do.	0	12	9	0	15	0

6 in. at 6d. to 9d. per square less than 7 in.

JOISTS, GIRDERS, &c.

	In London, or delivered Railway Vans, per ton.					
	£	s.	d.	£	s.	d.
Rolled Steel Joists, ordinary sections	6	0	0 ...	6	15	0
Compound Girders, ordinary sections	7	10	0 ...	8	10	0
Steel Compound Stancheons	9	2	6 ...	10	12	6
Angles, Tees and Channels, ordinary sections	7	10	0 ...	8	10	0
Flitch Plates	7	15	0 ...	8	5	0
Cast Iron Columns and Stanchions including ordinary patterns	6	12	6 ...	7	15	0

METALS.

	Per ton, in London.					
IRON—	£	s.	d.	£	s.	d.
Common Bars	7	0	0 ...	7	10	0
Staffordshire Crown Bars, good merchant quality	7	10	0 ...	8	0	0
Staffordshire "Marked Bars"	9	10	0 ...		—	
Mild Steel Bars	8	5	0 ...	8	15	0
Hoop Iron, basis price	8	15	0 ...	9	0	0
,, ,, Galvanized	16	10	0 ...		—	
(*And upwards, according to size and gauge.)						
Sheet Iron, Black—						
Ordinary sizes to 20 g.	9	0	0 ...		—	
,, ,, 24 g.	10	0	0 ...		—	
,, ,, 26 g.	11	15	0 ...		—	
Sheet Iron, Galvanised, flat, ordinary quality—						
Ordinary sizes—6 ft. by 2 ft. to 3 ft. to 20 g.	12	10	0 ...		—	
Ordinary sizes to 22 g. and 24 g.	13	0	0 ...		—	
,, ,, 26 g.	14	0	0 ...		—	
Sheet Iron, Galvanised, flat, best quality—						
Ordinary sizes to 20 g.	15	10	0 ...		—	
,, ,, 22 g. and 24 g.	16	0	0 ...		—	
,, ,, 26 g.	17	10	0 ...		—	
Galvanised Corrugated Sheets—						
Ordinary sizes 6 ft. to 8 ft. 20 g.	12	10	0 ...		—	
,, ,, 22 g. and 24 g.	13	0	0 ...		—	
,, ,, 26 g.	13	15	0 ...		—	
Best Soft Steel Sheets, 6 ft. by 2 ft. to 3 ft. by 20 g. and thicker	11	0	0 ...		—	
Best Soft Steel Sheets, 22 g. & 24 g.	12	0	0 ...		—	
,, ,, ,, 26 g.	13	10	0 ...		—	
Cut nails, 3 in. to 6 in.	9	0	0 ...	9	10	0
(Under 3 in., usual trade extras.)						

LEAD, &c.

	Per ton, in London.					
	£	s.	d.	£	s.	d.
LEAD—Sheet, English, 3lb. and up	16	0	0 ...		—	
Pipe in coils	16	10	0 ...		—	
Soil pipe	19	0	0 ...		—	
Compo pipe	19	0	0 ...		—	
ZINC—Sheet—						
Vieille Montagne ton	30	5	0 ...		—	
Silesian	30	0	0 ...		—	
COPPER—						
Strong Sheet per lb.	0	0	10 ...		—	
Thin ,, ,,	0	0	11 ...		—	
Copper nails ,,	0	0	10 ...		—	
BRASS—						
Strong Sheet ,,	0	0	9½ ...		—	
Thin ,, ,,	0	0	10 ...		—	
TIN—English Ingots ,,	0	1	4½ ...		—	
SOLDER—Plumbers' ,,	0	0	6½ ...		—	
Tinmen's ,,	0	0	8 ...		—	
Blowpipe ,,	0	0	9 ...		—	

ENGLISH SHEET GLASS IN CRATES.

15 oz. thirds	2½d. per ft. delivered.
,, fourths	2d. ,, ,,
21 oz. thirds	3¾d. ,, ,,
,, fourths	3d. ,, ,,
26 oz. thirds	4¾d. ,, ,,
,, fourths	3¾d. ,, ,,
32 oz. thirds	5¾d. ,, ,,
,, fourths	5d. ,, ,,
Fluted Sheet, 15 oz.	3¼d. ,, ,,
,, 21 oz.	4¼d. ,, ,,
¼ Hartley's Rolled Plate	2d. ,, ,,
⅜ ,, ,, ,,	2½d. ,, ,,
½ ,, ,, ,,	2½d. ,, ,,

OILS, &c.

		£	s.	d.
Raw Linseed Oil in pipes	per gallon	0	1	6
,, ,, ,, in barrels	,,	0	1	10
,, ,, ,, in drums	,,	0	2	0
Boiled ,, ,, in pipes	,,	0	1	11
,, ,, ,, in barrels	,,	0	2	0
,, ,, ,, in drums	,,	0	2	2
Turpentine, in barrels	,,	0	3	9
,, in drums	,,	0	3	11
Genuine Ground English White Lead	per ton	19	15	0
Red Lead, Dry	,,	19	5	0
Best Linseed Oil Putty	per cwt.	0	6	6
Stockholm Tar	per barrel	1	12	0

VARNISHES, &c.

	Per gallon.		
	£	s.	d.
Fine Pale Oak Varnish	0	8	0
Pale Copal Oak	0	10	6
Superfine Pale Elastic Oak	0	12	6
Fine Extra Hard Church Oak	0	10	0
Superfine Hard-drying Oak, for seats of Churches	0	14	0
Fine Elastic Carriage	0	12	6
Superfine Pale Elastic Carriage	0	16	0
Fine Pale Maple	0	16	0
Finest Pale Durable Copal	0	18	0
Extra Pale French Oil	1	1	0
Eggshell Flatting Varnish	0	18	0
White Copal Enamel	1	4	0
Extra Pale Paper	0	12	0
Best Japan Gold Size	0	10	6
Best Black Japan	0	16	0
Oak and Mahogany Stain	0	9	0
Brunswick Black	0	8	6
Berlin Black	0	16	0
Knotting	0	10	0
French and Brush Polish	0	10	0

TERMS OF SUBSCRIPTION.

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TENDERS.

Communications for insertion under this heading should be addressed to "The Editor," and must reach us *not later than* 10 *a.m. on Thursdays*. [N.B.—We cannot publish Tenders unless authenticated either by the architect or the building-owner; and we cannot publish announcements of Tenders accepted unless the amount of the Tender is stated, nor any list in which the lowest Tender is under 100*l.*, unless in some exceptional cases and for special reasons.]

* Denotes *accepted*. † Denotes *provisionally accepted*.

ABERTILLERY.—For altering and enlarging the chapel and school at the Trinity Presbyterian Church of Wales. Mr. R. L. Roberts, architect, Abercarn:—

J. Matthias	£2,262 0 0	J. Charles	£1,929 0 0
R. Tudor	2,105 0 0	J. Jenkins	1,900 0 0
D. W. Richards	2,017 0 0	Skidmore & McWhirter, Abertillery*	1,788 0 0
— Bagley	1,995 18 3		
Gaen Bros.	1,989 18 0		

BRAINTREE.—For sewering, kerbing, channelling, and making-up Victoria-street, for the Urban District Council. Mr. H. H. Nankivell, Surveyor, Vestry Hall, Braintree:—

R. A. Bonnett & Co.	£541 17 6
J. C. Trueman	540 0 0
Wilson, Border, & Co., Romford*	490 0 0

CANWELL (Staffs).—For structural alterations at the Hall, and for the erection and completion of a dairy with cottage on the Canwell Hall estate, near Tamworth, Staffs, for Mr. Philip S. Foster, M.P. Mr. C. M. C. Armstrong, architect, 5, High-street, Warwick:—

Foster & Dicksee	£1,259 0 0	T. Broad & Co.	£1,154 18 3
J. Bowen & Son	1,248 0 0	G. F. Smith & Sons	1,145 0 0
J. Parnell & Son	1,221 17 0	W. & J. Webb	1,125 0 0
J. Barnsley & Son	1,198 0 0	F. Davis	1,097 0 0
Collins & Godfrey	1,160 0 0	G. Hodges	1,088 0 0
		W. J. Whittall & Son, Birmingham*	1,035 0 0

CARDIFF.—For 80 yds. lineal of masonry dwarf wall and wrought-iron railing, Cathays Park, for the Corporation. Mr. W. Harpur, Borough Engineer, Town Hall, Cardiff. Quantities by Borough Engineer:—

W. T. Morgan	£565 0 0	Knox & Wells	£508 12 6
J. Allan & Sons	534 19 11	W. Rowe	494 3 9
E. Turner & Sons	517 7 11	G. Hallett*	492 5 10

[All of Cardiff.]

CARDIFF.—For the rebuilding of a portion of show-rooms, erection of stables, carrying out certain other alterations, and additions to premises in Working-street, Cardiff, for Messrs. Cross Bros. Mr. H. Budgen, architect, 96, St. Mary-street, Cardiff:—

W. Hopkins	£5,600 0 0	S. Shepton & Son	£4,645 0 0
J. Gibson	5,253 0 0	E. R. Evans & Bros.	4,594 6 3
J. H. Maggs & Co.	5,184 0 0	G. Griffiths & Sons	4,420 0 0
W. Thomas & Co.	5,163 0 0	D. Davies	4,259 0 0
J. Allan & Sons	5,110 0 0	E. Turner & Sons, Penarth-road, Cardiff*	3,965 0 0
W. Symonds & Co.	4,949 18 2		
Knox & Wells	4,848 0 0		
G. Hallett	4,800 0 0		

CUPAR.—For the construction of sewage disposal works, comprising the laying of cast-iron and fireclay pipes, the building of manholes, culvert, septic tanks, bacteria filter beds, and other relative works, for the Town Council. Mr. H. Bruce, C.E., 67, Crossgate, Cupar, Fife:—

	Original Tender.		Amended Tender.
A. Mitchell	£10,450	....	Unaltered
W. Jackson	9,773	....	do.
T. Beveridge	9,161	....	£7,061
C. Wilson	8,617	....	Unaltered
A. M. White & Son	8,282	....	do.
R. R. Gordon	8,267	....	do.
D. Gilmour	8,179	....	do.
R. C. Brebner & Co.	7,936	....	do.
G. Mackay & Son	7,890	....	do.
J. Martin	7,766	....	do.
W. Dobson	7,626	....	£7,487
R. C. Crawford, Uddingston*	7,512	....	6,833
A. Fraser	7,327	....	Unaltered
W. Mitchell & Sons	7,270	....	£6,942
J. Gray & Sons	7,265	....	7,151
T. Christie	7,234	....	7,126
J. Mackay	7,151	....	Unaltered
Stirling & Kinniburgh, Ltd.	6,849	....	£6,863

[Engineer's estimate. £7.159.]

DENTON.—For sewering, draining, paving, flagging, etc., Frederick-street, Greswell-street, and Fern Bank-street, for the Urban District Council. Mr. G. H. Newton, Surveyor, Town Hall, Denton:—

Frederick-street and Greswell-street.

P. D. Hayes, Heaton Norris, Stockport.*‡

Fern Bank-street.

W. Norgrove & Sons, Hyde*‡

Retaining Wall.

W. Norgrove & Sons, Hyde*‡

‡ Schedule lists of prices.

FARINGDON (Berks).—For alterations and additions to the Gardeners' Arms Inn, for Messrs. T. & J. Arkell. Messrs. Drew & Sons, architects, Regent-circus, Swindon:—

P. Chick, Highworth* £265

HEATH TOWN.—For street works, Paul-street, Hill-street, Bond-street, and Read-street, for the Heath Town Urban District Council. Messrs. R. E. W. Berrington & Son, engineers, Wolverhampton and Westminster:—

J. Owens, St. Mark's-road, Wolverhampton .. £387

INVERURIE (N.B.).—For constructing foot pavements, for the Town Council. Mr. A. Crockett, Burgh Surveyor:—

J. Scott & Son	£230 0 0	G. Mitchell	£138 0 0
Sellar & Co.	158 0 0	J. Warrack, 57, Charlotte-street, Aberdeen*	124 8 4
W. Chisholm	155 0 0		
Paul & Ritchie	148 0 0		
J. Leith, jun.	146 0 0		

LECHLADE (Gloucestershire).—For alterations, etc., at the Red Lion Inn, for Messrs. T. & J. Arkell. Messrs. Drew & Sons, architects, Regent-circus, Swindon:—

P. Chick, Highworth* £259 15

LECHLADE.—For additions, etc., to the Sherborne Arms' Inn, for Messrs. T. & J. Arkell. Messrs. Drew & Sons, architects, Swindon:—

J. S. King, Lechlade* £127

LIDGET GREEN.—For additions to St. Wilfred's Sunday-school, for the vicar and wardens. Mr. T. Riley, architect and surveyor, 81, Beckside-road, Lidget Green. Quantities by architect:—

Excavators and Masons: C. Booth & Son, Lidget Green* .....
Carpenter and Joiner: W. Newell, Bradford* .....
Slater: J. Smithies, Great Horton* ....
Plasterers and Concreters: J. C. & A. Sunderland, Great Horton* .....
Plumber: A. Holmes, Lidget Green* ..
Painter: W. H. Hillain, Great Horton*

Schedules of Prices.

LLANDEBIE.—For building a villa at Llandebie, for Mr. Robert Matthews. Mr. D. Jenkins, architect, Llandilo:—

D. B. Johns & Co., Ammanford* £300

LLANDEBIE.—For building three dwelling-houses at Penygroes, Llandebie, for Messrs. David, Richard, & Rees Rees. Mr. D. Jenkins, architect, Llandilo:—

L. Davies, Penygroes, Llandebie* £715

LLANDILO.—For building a vicarage at Llandilo, for the Rev. Robert Williams, M.A., vicar. Mr. D. Jenkins, architect, Llandilo:—

W. Evans, Brynawel, Ammanford* .. £2,400

LLANDILO.—For building a villa in Alan-road, Llandilo, for Superintendent Evans. Mr. D. Jenkins, architect, Llandilo:—

J. Marles & Sons, Richardson-yard, Swansea* £520

LLANGADOCK.—For building a villa at Llangadock, for Mr. William Harries. Mr. D. Jenkins, architect, Llandilo:—

D. Price, Llangadock* £600

LLANHILLETH (Mon.).—For alterations and additions to the Walpole Hotel, for Messrs. Phillips & Sons, Ltd. Messrs. Swalwell & Havard, architects and surveyors, Steam Packet-chambers, Dock-street, Newport:—

J. Hooper & Co.	£485	W. Jones & Son	£397
C. H. Reed & Co.	450	J. Jenkins & Co., Clifton-road, Newport*	370
D. Lewis & Co.	449		
D. W. Richards & Co.	413		

LONDON.—Accepted for paving works in the following thoroughfares, for the Corporation of the City of London:—

Footways.—London Asphalte Co.: Beech-street, 105*l.* 6s. 6d.; White Rose-court (Widegate-street), 21*l.* 9s.; Abchurch-lane (King William-street and Cannon-street), 35*l.* 5s. 10d.; Church-row (Aldgate), 56*l.* 13s.; Fleur-de-Lis-court, Houndsditch (entrance only), 7*l.* 8s. 6d.; Nevill's-court, Fetter-lane, 46*l.* 9s. 6d.; Greystoke-place, Fetter-lane, 44*l.* 11s.

Carriageways.—London Asphalte Co.: Fann-street (portion of), 211*l.* 6s. 3d.; Bridgewater-square, 302*l.* 6s. 3d.

Carriageway.—French Asphalte Co: Gun-yard (Bishopsgate-street Without), 29*l.* 5s.

Carriageways.—Improved Wood Paving Co.: Chapel-street, 206*l.* 4s. 6d.; Silk-street, 361*l.* 19s. 2d.

TENDERS.—*Continued on Page* 81.

COMPETITIONS, CONTRACTS, AND PUBLIC APPOINTMENTS.

(For some Contracts, etc., still open, but not included in this List, see previous issues.)

COMPETITIONS.

Nature of Work.	By whom Required.	Premiums.	Designs to be Delivered
*PUBLIC LIBRARY	Cheshunt U.D.C.	Not stated	Sept. 23

CONTRACTS.

Nature of Work or Materials.	By whom Advertised.	Forms of Tender, etc., supplied by	Tenders to be Delivered
Repairs, Painting, etc., to Schools	Brighton Education Committee	T. Simpson & Sons, Surveyors, 17, Ship-street, Brighton	July 17
Two Traction Engines, 2 Stonebreaking Machines, etc.	Londonderry County Council	County Surveyor, County Court House, Londonderry	July 18
Stores	Bombay, Baroda, & Cen. In. Ry. Co.	T. W. Wood, Sec., Gloucester Hse., Bishopsgate-st. Without, E.C.	do.
Making-up and Paving Finland-road, etc.	Deptford Borough Council	Municipal Offices, 20, Tanners Hill, Deptford	do.
Thirty-one Cottages at Glyncorrwg	Glyncorrwg Building Club	Cook & Edwards, Architects, Masonic-buildings, Bridgend	do.
Painting and Cleaning Schools	Leeds Education Committee	W. Packer, Secretary, Education Offices, Leeds	do.
Trench Work	Glasgow Gas Department	A. Wilson, Engineer, 45, John-street, Glasgow	do.
Repairs & Improve., Boys' Sch., Georgetown, Tredegar	Monmouthshire Education Com.	D. Morgan, Architect, Charles-street-chambers, Cardiff	do.
Repairs & Improvements, School, Traedrhiwgwair	do.	do.	do.
Repairs and Improve., Infants' Sch., New Tredegar	do.	do.	do.
*ERECTION, WHARF, HORNCHURCH MARSHES	Corporation of London	Engineer's Office, Guildhall, E.C.	do.
Mild Steel Plates, Bars, etc.	East Indian Railway Co.	C. W. Young, Secretary, Nicholas-lane, E.C.	July 19
Painting Work at City Dispensaries	North Dublin Guardians	J. O'Neill, Clerk, Board-room, North Brunswick-street, Dublin	do.
Concrete Paving, etc., of Carriageways of Streets	Edinburgh Roads Department	City Road Surveyor, City-chambers, Edinburgh	do.
House for Master at Crumpsall Workhouse	Manchester Guardians	A. J. Murgatroyd, Architect, 23, Strutt-street, Manchester	do.
Alterations, etc., Servants' Quar.. Ffrwdgrech, Brecon	Mr. D. Evans	B. L. Pritchard, 22, Castle-street, Brecon	do.
Buildings in the Stable-yard, Ffrwdgrech	do.	do.	do.
Alterations, etc., to Stables, etc.	do.	do.	do.
Classroom, Nantyglo Council School	Monmouthshire Education Com.	R. L. Roberts, Architect, Abercarn	do.
1,000 tons of Grit Sand	Ipswich Corporation	E. Buckham, Borough Surveyor, Town Hall, Ipswich	do.
Limestone, Granite, and Tar Macadam	Ilkley U.D.C.	F. Hall, Council Offices, Ilkley	do.
Brick Abutments, Piers, Girders, for Temporary Bdge.	Glasgow Corporation	J. R. Sutherland, City Chambers, 45, John-street, Glasgow	do.
Additions to Superintendent's House, Alnwick Hill	Edinburgh & District Water Trustees	E. C. Carse, Architect, 37, Frederick-street, Edinburgh	do.
Stable, etc.	do.	do.	do.
Reconstruction of Drainage System of Waverley Mkt.	Edinburgh City Council	Burgh Surveyor, Police-chambers, Edinburgh	do.
Tar Macadam, Bridge-street and Churwell Schools	Morley Education Committee	W. E. Putman, Borough Engineer, Town Hall, Morley	July 20
Two Semi-Detached Houses at Langley Park	Consett Iron Co., Ltd.	C. E. Oliver, Architect, General Offices, Consett	do.
Twelve Cottages at Leadgate	do.	do.	do.
One Cottage at Consett	do.	do.	do.
Gas Cooking Stoves	Rhondda U.D.C.	O. Thomas, Engineer, Gas and Water Offices, Pentre	do.
Improvements, Morayshire Union Poorhouse	.....	J. Wittet, Architect, Elgin	do.
Four Shops and Houses, Towngate, Wyke	.....	W. Wilcock & Son, Architects, 9, Leeds-road, Bradford	do.
*INTERNAL REDECORATION OF TOWN HALL	Borough of Hampstead	Borough Engineer, Town Hall, Haverstock Hill, S.W.	do.
*GLAZED DRAIN PIPES	C.B. of Brighton	Borough Engineer, Town Hall, Brighton	July 21
Reconstruct. Watchhouse, Hill Culvert, Thurlstone	West Riding C.C.	F. G. Carpenter, County Surveyor, County Hall, Wakefield	do.
1,271 yds. Brick & Pipe Sewers (Belgrave Sewerage)	Leicester Corporation	E. G. Morley, Borough Surveyor, Town Hall, Leicester	do.
Painting, etc., Workmen's Dwellings, Manor-grove	Richmond Corporation (Surrey)	J. H. Brierley, Borough Surveyor, Town Hall, Richmond	do.
Gasholder and Steel Tank	Rhondda U.D.C.	O. Thomas, Engineer, Gas and Water Offices, Pentre	do.
2,000 yds. of Sewers	Clydebank Town Council	G. Ross, Burgh Surveyor, Clydebank	do.
Machine Tools, etc., Grange-road Centres	Bradford Education Committee	Stores Department, Education Offices, Manor-row, Bradford	do.
Furnishings, Branch Library, Morningside	Edinburgh City Council	R. Morham, City Arch., Public Wks. Office, City-chbrs., Edinburgh	do.
Painting Branch Library, Morningside	do.	do.	do.
Crossley's 13-brake Horse-power Gas Engine	Halstead U.D.C.	W. A. Nicholson, Surveyor, Halstead, Essex	July 22
Cottages, Edmund-road and Clough-road	Sheffield Improvement Committee	C. F. Wike, City Surveyor, Town Hall, Sheffield	do.
Two Schools at Bingley	West Riding Education Committee	J. Vickers-Edwards, County Architect, County Hall, Wakefield	do.
Alterations, etc., Newmarket Police Station	West Suffolk Standing Joint Com.	A. A. Hunt, County Architect, Sudbury and Bury St. Edmunds	do.
Two Houses	.....	T. Kershaw, Architect, Lanc. & York. Bank-chambers, Halifax	do.
Barkisland Upper Hall, etc.	.....	do.	do.
Boys' School, Bradford-road, Bingley	Bingley Grammar School Trust	W. Rhodes Nunn, Architect, 13, Market-street, Bingley	do.
Annual Contracts	Conway Corporation	Borough Surveyor, Town Hall, Conway	do.
Convenience, King Edward VII. Bridge, Kew	Richmond Corporation	Borough Surveyor, Town Hall, Richmond	July 24
Convenience, River-walk, Richmond	do.	do.	do.
Conversion, St. Peter's Sch. into Council Sch. for 260	Hereford Education Authority	J. Parker, City Surveyor, Town Hall, Hereford	do.
Causewaying, etc., King Edward-street	Perth Town Council	R. M. Killop, Burgh Surveyor, 12, Tay-street, Perth	do.
Workmen's Dwellings at Kilmainham	Dublin Improvements Committee	City Architect, Municipal-buildings, Cork-hill, Dublin	do.
Prudhoe and West Wylam Sewage Disposal	Hexham R.D.C.	J. E. Parker, C.E., Post-office-chambers, Newcastle-on-Tyne	do.
Steelwork, Esk Viaduct Renewal	Caledonian Railway Co.	District Engineer, Princes-street-station, Edinburgh	do.
Two Twin-Screw Steam Hopper Barges	Clyde Navigation Trustees	G. H. Baxter, 16, Robertson-street, Glasgow	do.
Additions, etc., to Miners' Office, Porth	Rhondda Miners' Federation	R. S. Griffiths, Architect, Tonypondy	do.
250 tons of Granite Setts	Worsley U.D.C.	J. A. Corson, Surveyor, Council Offices, Walkden	do.
Water Supply for Barns, House, & Farm, Sunnyside	Proprietor of Estate of Blairadam	Buchanan & Bennett, C.E., 12, Hill-street, Edinburgh	do.
*NEW SCHOOL AT BROOKWOOD	Surrey Education Committee	Jarvis & Richards, 36, Victoria-street, Westminster, S.W.	do.
*EXTENSION OF ELECTRIC LIGHT WORKS	Beckenham U.D.C.	Council's Surveyor, Beckenham	do.
*JOB. WORK, CLEVELAND-ST., W., ETC., ASYS.	Central London Sick Asy. Dist. Mgrs.	W. Lockwood, Architect, 3, Great Marlborough-st., Argyll-pl., W.	do.
*PAVING & DRAINAGE IN DRAYSON-MEWS	Royal Borough of Kensington	Borough Engineer's Office, Town Hall, High-st., Kensington, W.	do.
*PAINT., ETC., HOUSE. POOR WDS., EAST-ST., W.	St. Marylebone Guardians	A. S. Snell, Arch., 22, Southampton-buildings, Chancery-la., W.C.	do.
Stables and Waggon Shed at Hetton Downs	Hetton Downs Amic. & Indus. Soc.	Manager of the Society	July 25
*MAKING-UP BRADFIELD-ROAD	West Ham Corporation	J. G. Morley, Borough Engineer, Town Hall, West Ham, E.	do.
*TRAMWAY OFFICES & CAR DEPOT, PLAISTOW	West Ham Borough Council	do.	do.
Baths and Washhouses at Springbank	Glasgow Corporation	A. B. M'Donald, City Engineer, 64, Cochrane-street, Glasgow	do.
Club Premises, Briggate, Brighouse	.....	E. C. Brooke, Architect & Surveyor, 6, Huddersfield-rd., Brighouse	do.
Cast Iron Pipes	Exmouth U.D.C.	S. Hutton, Surveyor, Public Hall-chambers, Exmouth	do.
Steel Works and Improvements, South Moor-lane	Stanley U.D.C.	J. Routledge, Surveyor, Stanley, R.S.O.	do.
Street Crossings at Stanley, Oxhill, and South Moor	do.	do.	do.
Painting, Whitewashing, and Repairs, etc., of Schools	Dorchester National Schls. Managers	H. O. Lock, 24, High West-street, Dorchester	do.
Alterations, etc., to Brynhyfryd C.M. Chapel, Rhymney	.....	Chapel House	July 26
Water Plant, Bromsberrow	Malvern U.D.C.	W. O. Thorp, Surveyor and Waterworks Engineer, Malvern	do.
Rising Main, Bromsberrow to British Camp Reservoir	do.	do.	do.
Elementary School, Bradshaw-street, Nelson	Nelson Education Committee	T. Bell, Architect, Grimshaw-street, Burnley	do.
*PAINT., ETC., HIGHWOOD SCHL., BRENTWOOD	Metropolitan Asylums Board	Office of the Board, Embankment, E.C.	do.
*PAINTING AT JOYCE GREEN S.P. HOSPITAL	do.	do.	do.
*PAINTING AT DARENTH ASYLUM, KENT	do.	do.	do.
Iron Castings	Belfast Gas Committee	J. Stelfox, Engineer, Gasworks, Belfast	July 27
Boundary Wall, Charlestown-road, Blackley	Prestwich Guardians	T. Worthington & Son, Architects, 46, Brown-street, Manchester	do.
Cemetery Chapel, Caretaker's House, Roads, etc.	Panteg U.D.C.	D. J. Longher, Engineer, Bank-chambers, Pontypool	July 28
School, Wolverhampton-road	Walsall Education Committee	Bailey & McConnal, Architects, Bridge-street, Walsall	do.
Tramway Depot, Coventry-road	Birmingham Tramway Department	Harris & Harris, Surveyors, 9, Bennett's-hill, Birmingham	do.
*STEELWORK, ETC., NEW PUBLIC HALL, HULL	Hull Corporation	City Architect, Town Hall, Hull	do.
Elementary School, Lydbrook	Gloucestershire Education Com.	M. H. Medland, County Architect, 15, Clarence-street, Gloucester	July 29
Main Line & Br'ches between Laughton & Kirk Sandell	South Yorkshire Joint Line Com.	E. Parry, Engineer, 13, Victoria-street, Westminster, S.W.	do.
Street-making (Bridge-street, etc.)	Ellesmere Port and Whitby U.D.C.	J. M. Hudson, Surveyor, Bank-buildings, Ellesmere Port	do.
*NEW GRAMMAR SCHOOL, LINCOLN	The Governors	Leonard Stokes, Architect, 2, Great Smith-street, S.W.	do.
Choppington Guide Post New School	Northumberland Education Com.	J. A. Bean, County Surveyor, The Moot Hall, Newcastle-on-Tyne	July 31
Private Street Improvements, Chester-street, etc.	Prestwich U.D.C.	Surveyor, Chester Bank, Prestwich	do.
Two miles of Sewers (Wrington Sewerage Works)	Axbridge U.D.C.	A. Powell, Engineer, 10, Orchard-street, College Green, Bristol	do.

CONTRACTS.—*Continued.*

Nature of Work or Materials.	By whom Advertised.	Forms of Tender, etc., supplied by	Tenders to be Delivered
405 yds. of New Street (Richmond-street)	Brackley R.D.C.	W. J. Treadwell, Council's Surveyor, Middleton Cheney, Banbury	July 31
Alterations, etc., to Workhouse	Derby Guardians	F. C. Coulthurst, Architect, 4, Albert-street, Derby	do.
Iron Fencing and Wall at New Cemetery.....	Sevenoaks U.D.C.	S. Towlson, Surveyor, Council Offices, Argyle-road, Sevenoaks ..	do.
Granite.....	East Dereham U.D.C.....	H. G. Himson, Surveyor, Theatre-street, East Dereham	do.
Repairing & Paint. Outside Workhouse, Tatlingstone	Samford Guardians	A. J. Howard, Clerk, 34, Princes-street, Ipswich.....	do.
Station at Waterford.....	Gt. Southern & Western Ry., Ireland	Engineer to the Company, Inchicore, Dublin	Aug. 1
Premises, Ballymoney Technical School		J. A. Hanna, Architect, Ocean-buildings, Belfast	do.
*MAK.-UP FERNDALE, GLADESMORE, ETC., RDS.	Tottenham U.D.C.	Council's Engr., Coombes Croft House, 712, High-rd., Tottenham	do.
*SUPPLY., ETC., 4-ft. CON. TUBES, MARSH-LA.	do.	do.	do.
Painters' Work at Police Offices, etc.....	Glasgow Corporation	Office of Public Works, City Chambers, 64, Cochrane-st., Glasgow	Aug. 2
Cables, Overhead Lines, Street Lamps & Fittings, etc.	Ebbw Vale U.D.C.	R. P. Wilson, Engineer, 66, Victoria-street, Westminster	Aug. 5
Gas Cookers, Heating Stoves, etc.	Belfast Gas Committee	J. Stelfox, Engineer and Manager	Aug. 9
Embsay Moor Reservoir	Skipton U.D.C.	G. H. Hill & Sons, Engineers, 3, Victoria-st, Westminster, S.W.	Aug. 21
Fire Station and Dwellings on Blackey Moor	Blackburn Corporation	Briggs & Wolstenholme & Stones & Stones, Richmond-ter., Blackbn.	Aug. 26
Tattenhall Pumping Sta. Extensions (Contract No. 2)	Wolverhampton Corporation	E. A. B. Woodward, Waterwks. Engr., Town Hall, Wolverhampton	Sept. 1
Refuse Destructor, Plant, and Buildings	Merthyr Tydfil U.D.C.	T. F. Harvey, Engr. and Surveyor to the Council, Merthyr Tydfil	do.
38,000 lineal metres of Earthenware Tubing.....	Corporation of Callao (Peru)	Graham, Rowe, & Co., Mersey Chambers, Liverpool	Oct. 5
C.-I. Piping for Ventilation	do.	do.	do.
Cleaning and Painting of Intake, etc., Schools.....	West Riding Education Committee	S, Abson, Divisional Clerk, Education Offices, Woodhouse	No date
Mill, Milnshaw, Accrington		G. Hayhurst and J. Whittaker, Joint Secs., 5, Oak-st., Accrington	do.
School at New Craighall	Inveresk (Land) School Board	A. Murray Hardie, Architect, 20, George-street, Edinburgh	do.
Laundry and Alterations, Brampton Workhouse....		T. Taylor Scott, Architect and Surveyor, 43, Lowther-st., Carlisle	do.
Ten Through Houses, Longwood-grove, Hunslet....		J. H. Dunn & Co., Estate Agents, Waterloo-road, Hunslet.....	do.
Two Through Houses, Longwood-grove, Hunslet ..		do.	do.
Wesleyan Chapel and Schools, Bramham, Leeds		Danby & Simpson, Architects, 73, Albion-street, Leeds.....	do.
Painting, Colouring, etc., Severn-rd. Council School	Cardiff Education Committee	J. J. Jackson, Education Offices, Howard-gardens, Cardiff	do.
Catholic Church, Tyne Dock, South Shields.....		Brodwick, Lowther, & Walker, Archs., York-chbrs., 77, Lowgate, Hull	do.

PUBLIC APPOINTMENTS.

Nature of Appointment.	By whom Advertised.	Salary.	Application to be in
*JUNIOR BUILDING SURVEYOR	London C.C.	150*l.* per annum.....	July 20
*CHIEF ASSISTANT IN BUILD. TRADES DEPOT	Northern Polytechnic Institute....	150*l.* per annum	July 24
*JUNIOR ASSISTANT	Willesden D.C.	175*l.* per annum	do.
*CLERK OF WORKS.....	Ilkley U.D.C.	3*l.* per week	July 26
*TEACHER OF BUILDER'S QUANTITIES.....	East Ham Technical College	Not stated	No date
*TEACHER OF BRICKWORK	do.	do.	do.
*TEACHER OF PLUMBER'S WORK	do.	do.	do.

Those marked with an asterisk (*) are advertised in this number. *Competitions*, iv. *Contracts*, iv. vi. viii. x. *Public Appointments*, xvi. xvii

TENDERS.—*Continued from page 79.*

LLANWRTYD WELLS.—For building a bungalow at Llanwrtyd, for Mr. Rhys D. Jones, B.A. Mr. D. Jenkins, architect, Llandilo :—
N. Evans, Llanwrtyd* £685

LONDON.—For the erection of new public baths in Manor-street, King's-road, Chelsea, for the Chelsea Borough Council. Messrs. Wills & Anderson, architects, 4, Adam-street, Adelphi, W.C. Quantities by Mr. F. H. A. Hardcastle, 5, Old Queen-street, S.W. :—

—	—	Reinforced concrete by the Expanded Metal Co.	Total.
	£	£	£
Sims & Woods	34,396	100	34,496
Fryer & Co.....	33,588	100	33,688
W. Taylor & Co.	32,500	500	33,000
Killby & Gayford	32,125	690	32,815
Spencer, Santo, & Co., Ltd.	32,000	675	32,675
Godson & Sons	31,900	650	32,550
Appleby & Sons.....	31,662	850	32,512
Foster & Dicksee	31,500	700	32,200
Johnson & Son	31,424	580	32,004
Lole & Co.	31,817	176	31,993
C. Wall, Ltd.	31,250	700	31,950
Strange & Sons	31,522	191	31,713
Stimpson & Co.	30,700	1,000	31,700
Bulled & Co.	31,111	530	31,641
Leslie & Co., Ltd.	30,975	624	31,599
Dearing & Co.	31,107	356	31,463
Martin & Wells, Ltd. ..	30,900	500	31,400
Kirk & Randall	30,546	500	31,046
Pattinson & Son, Ltd. ..	31,000	—	31,000
Patman & Fotheringham Ltd.	30,500	500	31,000
Holliday & Greenwood..	30,577	400	30,977
W. Johnson & Co., Ltd..	29,800	1,050	30,850
H. L. Holliday	30,840	—	30,840
W. Lawrence & Son....	29,974	750	30,724
Willcock & Co.	29,872	850	30,722
Lorden & Son.....	29,827	839	30,666
Cropley Bros., Ltd.	29,997	552	30,549
Prestige & Co.....	29,715	830	30,545
D. W. Barker	29,898	540	30,438
W. J. Renshaw	29,973	449	30,422
Wallis & Sons, Ltd.	29,440	950	30,390
W. Wallis	29,113	1,200	30,313
Cowley & Drake.....	29,931	1,280	30,211
C. G. Hill.....	28,997	1,060	30,057
A. Hudson & Co.	29,220	750	29,970
B. T. Nightingale	29,200	500	29,700
W. G. Minter	29,400	—	29,400
Galbraith Bros.	28,429	818	29,247
A. Faulkes	28,192	943	29,135
A. N. Coles*	28,515	534	29,049
Chessum & Sons.....	28,499	—	28,499
J. M. Patrick	27,959	—	27,959
Garrett & Son.....	27,592	661	28,253

LONDON BOARD OF EDUCATION TENDERS.

PAINTING OF SCHOOLS DURING THE SUMMER HOLIDAYS, 1905.

Camberwell, N., Crawford-street (Painting Interior and Exterior).

H. L. Holloway	£674 0 0	W. Sayer & Son	£511 0 0
J. R. Sims	632 0 0	J. J. Richards	486 19 0
W. V. Goad ..	613 0 0	H. Bragg & Sons, 19, Robsart-street, Brixton-road* ..	385 4 5
J. Appleby & Sons	532 0 0		
Maxwell Bros., Ltd.....	519 14 6		

Chelsea, "Ashburnham" (Painting Interior and Exterior).

C. Johnson ..	£1,340 10 0	Bristow & Eatwell	£637 0 0
Lole & Co. ..	827 0 0	E. B. Tucker ..	612 0 0
Crabb & Sons	820 0 0	J. & M. Patrick	586 0 0
W. Johnson & Co., Ltd...	757 0 0	C. Wall, Ltd. ..	582 2 6
W. King & Son	710 0 0	E. Triggs, 92, The Chase, Clapham*....	541 0 0
Lathey Bros.	655 0 0		
J. Garrett & Son	640 0 0		

Clapham, Honeywell-road (Painting Interior of Old Portion and Interior and Exterior of Enlargement).

W. King & Son	£686 0 0	R. A. Jewell ..	£579 0 0
J. Shelbourne & Co.	683 0 0	E. P. Bulled & Co.	574 0 0
Martin, Wells, & Co., Ltd.	669 0 0	W. Hornett ..	569 7 0
E. Flood	663 0 0	J. Garrett & Son	553 0 0
W. Johnson & Co., Ltd.....	619 0 0	E. B. Tucker..	462 12 6
Holloway Bros. (London), Ltd.....	584 0 0	E. Triggs, 92, The Chase, Clapham* ..	398 0 0

Fulham, the "Peterborough" (Painting Interior and Exterior).

Lole & Co.	£790 0	C. Leather & Sons	£511 0
Hudson Bros. ..	689 19	Lathey Bros.....	498 0
A. Leather.....	628 0	W. Sayer & Son .	462 0
W. Johnson & Co., Ltd.....	620 0	E. Triggs, 92, The Chase, Clapham*	421 0
Crabb & Son	569 0		

Hampstead, Fleet-road (Painting Interior and Exterior).

Holloway Bros. (London), Ltd.	£1,110 0 0	Stevens Bros...	£779 0 0
Patman & Fotheringham, Ltd.	850 0 0	F. Chidley & Co., Ltd.....	709 0 0
T. Cruwys	826 0 0	Aldridge & Son, 78, Harlesden-road, Willesden	
G. Neale	820 0 0	Green*	643 13 4

LONDON.—For the erection of five shops at Askew-road, Hammersmith, for Mr. A. Gard. Mr. Jasper J. Kelf, architect, 213, Hoe-street, Walthamstow, and Leytonstone :—

Cropley Bros.	£5,500	Drummond	£3,450
S. W. Robinson....	4,500	Wheeler, Woodford*	3,350
J. Reppen	3,590		

LONDON.—For alterations and additions to casual wards, Lower-road, Rotherhithe, S.E., for the Bermondsey Guardians. Messrs. Newman & Newman, architects, 31, Tooley-street, London Bridge, S.E. :—
W. Reason, 47, Rosebery-avenue, E.C. £429

LONDON.—For alterations to No. 814, High-road, Tottenham, for Mr. A. J. H. Ladd. Mr. Augustine C. Green, architect and surveyor, 40, Bruce Castle-road, Tottenham, N. :—

Pollard & Brand..	£1,280	J. Stewart.....	£944
A. Monk.....	1,179	Sims & Woods	920
J. Groves & Sons..	1,024	J. Almond & Son, Ltd.*	870
A. Porter	959		

LUTON.—For the erection of a bandstand at Wardown Park, for the Luton Corporation. Mr. S. F. L. Fox, A.M.Inst.C.E. :—
W. MacFarlane & Co., Glasgow £215

LUTON.—For unclimbable iron fence, for the Town Council of Luton. Mr. S. F. L. Fox, A.M.Inst.C.E. :—

	Per yd. s. d.
Bayliss, Jones, & Bayliss, Wolverhampton*.....	11 10

NORBITON.—For alterations to 200, London-road, Norbiton, for Mr. A. Moss. Mr. Jasper J. Kelf, architect, 213, Hoe-street, Walthamstow, and Leytonstone :—

Warwick & Son	£465	Drummond, Leytonstone*	£440

NORWICH.—For colouring, painting, whitewashing, etc., various schools, for the Education Committee. Mr. C. J. Brown, architect and surveyor, Cathedral Offices, The Close, Norwich :—

A. Taylor, 96, Only-street, Norwich* ..	£17 15 0
Lawn & Blyth, Ber-street, Norwich* ..	28 10 0
A. Browne, Only-street, Norwich*.....	70 0 0
E. E. Huggins, Quebeck-road, Norwich*	136 0 0
Ludlow & Son, St. Giles-street, Norwich*	31 7 9
Abbs, 106, Aylsham-road, Norwich*	16 10 0
I. W. King, Southwell-road, Norwich* ..	109 0 0

PONTYPOOL.—For erecting new school, and alteration and additions to Penygarn Chapel. Mr. W. Beddoe Rees, architect, 3, Dumfries-place, Cardiff :—

Jenkins & Co.	£2,770	Bowers & Co.	£2,462
Bailey Bros.	2,650	Leadbeter Bros. ..	2,430
T. Broad & Co.....	2,632	Jordan & Co., Newport*‡	2,317
Meara & Co.....	2,550		
J. Charles	2,495		

‡ To be completed in ten months.

PORTARDAWE.—For water mains, etc., for the Rural District Council. Mr. J. Morgan, Surveyor. Quantities by Surveyor :—

At Cwmnantllwyd, Cilybebyll, and Gwyn-street, Alltwen.
D. Evans, Llanelly ‡ £53 19 6

At Yrismndw and Waunleison, Gwann-cae-Gurwen.
J. Rees, Ywamndw Glw £39 7 6

For 190 yds. of 4-in. Kerbstone at Vardre-road, Clydach.
E. Reynolds, Clydach-on-Tawe.. £36 8 4

QUEENSBURY.—For erecting six through houses at Ford Hill. Messrs. J. Drake & Son, architects, Queensbury :—

Mason : G. Drake, Queensbury	£604 0
Joiner and Carpenter : H. Abbott, Queensbury	422 15
Slater : A. Blagborough, Bradshaw	30 10
Plasterer : W. H. Sutcliffe, Queensbury ..	109 10
Plumber : W. Hodgson, Queensbury	256 0

RHYDYMWYN (Flintshire).—For erecting a new bridge and approaches over the River Alyn, for Holywell Rural District Council. Mr. S. Evans, County Surveyor, County-buildings, Mold :—

Contract A.—Excavation for, and Building of, Abutment and Wing Walls, Filling, Road-Making, Draining, etc.

Sibeon Bros...	£443 10 0	G. Wright & Sons	£356 0 0
R. Williams..	408 5 10	H. Hughes ..	343 8 0
T. Foulkes ..	393 17 8	E. O. Probert	341 19 0
R. Peters	370 0 0	M. S. Rogers, Flint*	313 14 0
T. Roberts ..	430 0 0		
P. Edwards ..	375 0 0		

Contract B.—For Supplying and Erecting Steel Work Complete.

Pendleton Iron Works.....	£329 17 3	J. O. Brettell..	£254 10 6
E. C. & J. Keay	327 0 0	Gilbert Thompson & Co. ..	220 0 0
Rubery & Co...	300 0 0	Dorman, Long, & Co, Middlesbrough*	158 0 0
Dee Shipbuilding Co.	270 0 0		

SALISBURY.—For erecting proposed post office, Inland Revenue offices, and county court, for H.M. Commissioners of Works and Public Buildings :—

A. W. Long ..	£11,691 0	Bird & Pippard	£9,700 0
Hayward & Wooster....	10,493 0	Webb & Co. ..	9,487 0
		W. Webb.....	9,339 0
F. Merrick & Son.....	10,417 0	H. M. Patrick..	9,000 0
		A. J. Colborne	8,899 0
H. & C. Spackman	9,987 0	Wort & Way ..	8,750 0
		Harris Bros. ..	8,475 0
E. Walters & Son.....	9,950 0	J. Long & Sons	8,414 0
		S. Salter	8,361 0
E. Hall	9,890 0	G. Moore*	7,436 13
Stephens, Bastow, & Co. ..	9,734 0		

SOUTHAMPTON.—For constructing a pipe sewer at Hoare's Hill, for the Corporation. Mr. J. A. Crowther, Borough Engineer :—

W. Lawrence ..	£232 0 0	Douglas & Richards ..	£189 0 0
G. R. Long ..	227 13 3		
F. Osman	211 0 0	J. Butt*	187 0 0

[All of Southampton.]

SOUTHAMPTON.—For constructing a pipe sewer and storm water drains in Bellemoor-road and Hill-lane for the Corporation. Mr. J. A. Crowther, Borough Engineer :—

G. R. Long ..	£1,771 16 7	F. Osman ..	£1,447 0 0
H. J. Hood ..	1,662 0 0	Douglas & Richards*..	1,327 0 0
H. Lawrence.	1,529 0 0		
J. Butt.....	1,498 0 0		

[All of Southampton.]

SWANSEA.—For Libanus new Baptist Chapel, Cwmbwrla. Mr. H. A. Ellis, architect, 10, Fisher-street, Swansea :—

T. Richards & Son	£4,810	Lloyd Bros.	£4,490
Walters & Johns ..	4,800	J. & D. Jones	4,400
Bennet Bros.....	4,750	J. & F. Weaver, Swansea*	4,100
D. Jenkins	4,699		

[Architect's estimate, £4,376.]

SWANSEA.—For erecting ten pairs of semi-detached villa residences on the Coedsaeson Estate, Sketty, for the Committee of the Grosvenor Building Club. Mr. Harold Kennard, architect, 13, Railway-approach, London Bridge, and at Swansea. Quantities by Mr. John Moir Kennard, 13, Railway-approach, London Bridge :—

Waring, Cole, & Waring	£11,366 18	J. & T. Weaver	£9,900 0
		Lloyd Bros. ..	9,615 0
E. Thomas & Sons	10,684 0	T. Richards ..	9,614 0
		Pye, Parkinson, & Co., Sketty*	8,638 0
D. Jenkins....	10,500 0		
G. Mercer	9,995 0	J. Richards ..	7,800 0
Price Bros. ..	9,951 0		

SWINDON.—For erection of a detached house at Shaw, for Mr. H. Carter. Messrs. Drew & Sons, architects, Regent-circus, Swindon. Quantities by the architects :—

H. & C. Spackman, Swindon* £630 2 7

SWINDON.—For erection of six cottages and house and shop at Rodborne, for Mr. J. Tallyn. Messrs. Drew & Sons, architects, Regent-circus, Swindon :—

J. G. Norman, Swindon* £912 10

SWINDON.—For alterations, etc., to the Plough Inn, Badbury Hill, for Messrs. T. & J. Arkell. Messrs. Drew & Sons, architects, Regent-circus, Swindon :—

E. Cowley, Wroughton* £289 15

THORNTON HEATH.—For redrainage and plumbing work, etc., at Infirmary, Mayday-road, for the Croydon Guardians. Mr. H. Berney, surveyor, 104, George-street, Croydon :—

D. W. Barker, Church-road, Croydon .. £2,545

TEDDINGTON.—For alterations to premises, 1 to 5, Elphin-villas, Broad Land, Teddington. Mr. Jasper J. Kelf, architect, 213, Hoe-street, Walthamstow, and Leytonstone :—

W. Rice & Son	£1,995 0 0	Robinson & Co.	£1,400 0 0
S. Smith	1,864 13 7	Drummond, Leytonstone*	1,365 0 0
Jay & Co. ..	1,610 0 0		

TOTNES.—For erecting stands, bridge, paddock, and offices, for the Totnes and Bridgetown Races. Mr. W. F. Tollitt, surveyor, 10, High-street, Totnes. Quantities by surveyor :—

T. Brook, Totnes* £245

WALTON-ON-THAMES.—For making-up part of Burwood Park-road, for the Urban District Council. Mr. R Wilds, Engineer and Surveyor, Council Offices, Walton. Quantities by Engineer :—

C. Horsell	£617 13 8	S. Kavanagh & Co.	£399 2 3
A. C. Soan	496 15 7	Free & Sons ..	392 4 4
J. Jackson	463 10 9	E. Potterton & Co., East Molesey*	378 0 0
G. A. Franks ..	421 4 0		
J. Shelbourne & Co.	410 7 5		
G. Hebburn ..	400 4 1		

WIMBORNE.—For erecting a new church house at Wimborne Minster. Mr. W. J. Fletcher, architect, Wimborne :—

		For Deal Roof and Joinery.
George & Harding ..	£3,395 0 0	£3,021 0 0
Burt & Vick	3,217 10 0	2,967 0 0
Jenkins & Sons	3,179 0 0	2,963 0 0
McWilliam	3,127 0 0	2,869 0 0
Norman Bros.....	3,062 15 9	2,916 0 0
C. H. Green.....	2,998 0 0	2,838 0 0
J. H. Childs.....	2,987 0 0	2,683 0 0
W. E. Jones & Son	2,928 0 0	2,739 0 0
F. Hoare & Son....	2,895 0 0	2,815 0 0
J. Smith	2,884 10 0	2,618 0 0
J. A. Colborne, Northstreet, Swindon*..	2,695 6 10	2,495 17 10

WOOD GREEN.—For the erection of a new school in Lordship-lane, Wood Green. Mr. C. J. Gunyon, Architect, Town Hall, Wood Green :—

Foster Bros..	£9,676 0 0	Banyard & Sons	£8,499 0 0
J. Thomas ..	9,593 18 0	J. & M. Patrick	8,439 0 0
Appleby & Sons.....	9,549 0 0	Willmott & Sons	8,392 0 0
W. A. Hyde..	9,268 0 0	W. Lawrence & Son	8,244 0 0
A. Porter....	9,076 0 0	A. E. Symes..	8,200 0 0
J. & C. Bowyer	8,976 0 0	A. Monk	8,184 0 0
J. Stewart ..	8,966 0 0	A. G. Crisp ..	7,870 0 0
Rudd & Son..	8,900 0 0	F. J. Holliday	7,840 0 0
H. E. Moss & Co.	8,897 7 0	Pollard & Brand	7,677 0 0
Treasure & Sons.....	8,751 0 0	H. Knight & Son	7,064 0 0
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1894.		1895.	
1. Westminster	(out of print).	8. Fountains...	(out of print)
2. Rievaulx	JULY.	9. Tynemouth	FEB.
3. Glastonbury	AUG.	10. Malmesbury	MARCH.
4. Croyland	SEPT.	11. Netley	APRIL.
5. Whitby	OCT.	12. Bolton	MAY.
6. Bath	NOV.	13. Lindisfarne	JUNE.
7. Tewkesbury	DEC.	14. Furness	JULY.
		15. Romsey ...	(out of print).

1896.		1897.	
16. Kirkstall ...	(out of print).	20. Great Malvern	JAN.
17. Abbeydore...	APRIL.	21. Sherborne...	APRIL.
18. Selby	JULY.	22. Bayham	JULY.
19. Byland...	OCT.	23. Perahore ...	(out of print).

1898.		1899.	
24. Melrose ...	(out of print).	28. Llanthony ...	(out of print).
25. Waltham ...	(out of print).	29. Hexham ...	(out of print).
26. Tintern	JULY.	30. Valle Crucis	(out of print).
27. Lanercost...	OCT.	31. Cartmel	OCT.

1900.		1901.	
32. Dorchester	JAN.	36. Milton Abbas (out of print). (The last of the Series.)	
33. Boxgrove	APRIL.		
34. Dunstable...	JULY.		
35. Buildwas	OCT.		

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To be LET for business only (suitable for architect or accountant) a large and light ROOM, 18 ft. by 13 ft. Charmingly situated, looking out over garden in old Inn of Court, near Chancery-lane. Arrangements can be made for clerk.—Apply by letter to CHAMBERS, care of Streets, 8, Searle-street, Lincoln's-inn, W.C.

COUNTY of LONDON.
The London County Council invite APPLICATIONS for the position of JUNIOR BUILDING SURVEYOR in the Housing Department.
Candidates must be over 20 and under 25 years of age, and must have had experience in dealing with workmen and managing repairs, and should possess a good knowledge as to materials and building construction, including estimating and measuring up repairs and the preparation of plans, etc.
The appointment will in the first instance be on probation for six months, the commencing salary being at the rate of 100*l.* a year, rising by annual increments of 10*l.* to 150*l.* a year.
The appointment will be subject to the conditions that the person appointed shall give his whole time to the duties of his office; that he shall not be allowed to take any private business or other paid employment; that any fees received by him either as a witness or in any other capacity be paid to the Council.
Applications should be made on the official form to be obtained from the CLERK of the London County Council, the County Hall, Spring Gardens, S.W., to whom they must be returned not later than TEN a.m. on THURSDAY, 20th JULY, 1905.
Canvassing either directly or indirectly will be held to be a disqualification for appointment.
G. L. GOMME,
Clerk of the London County Council.
County Hall,
Spring-gardens.
12th July, 1905.

EAST HAM TECHNICAL COLLEGE.
EVENING CLASSES.
The Committee invite APPLICATIONS for the posts of TEACHERS of the EVENING CLASSES in—
(a) Builder's Quantities.
(b) Brickwork.
(c) Plumber's Work.
For full particulars and form of application apply immediately to W. H. BARKER, B.Sc., Principal, Technical College, East Ham, E.

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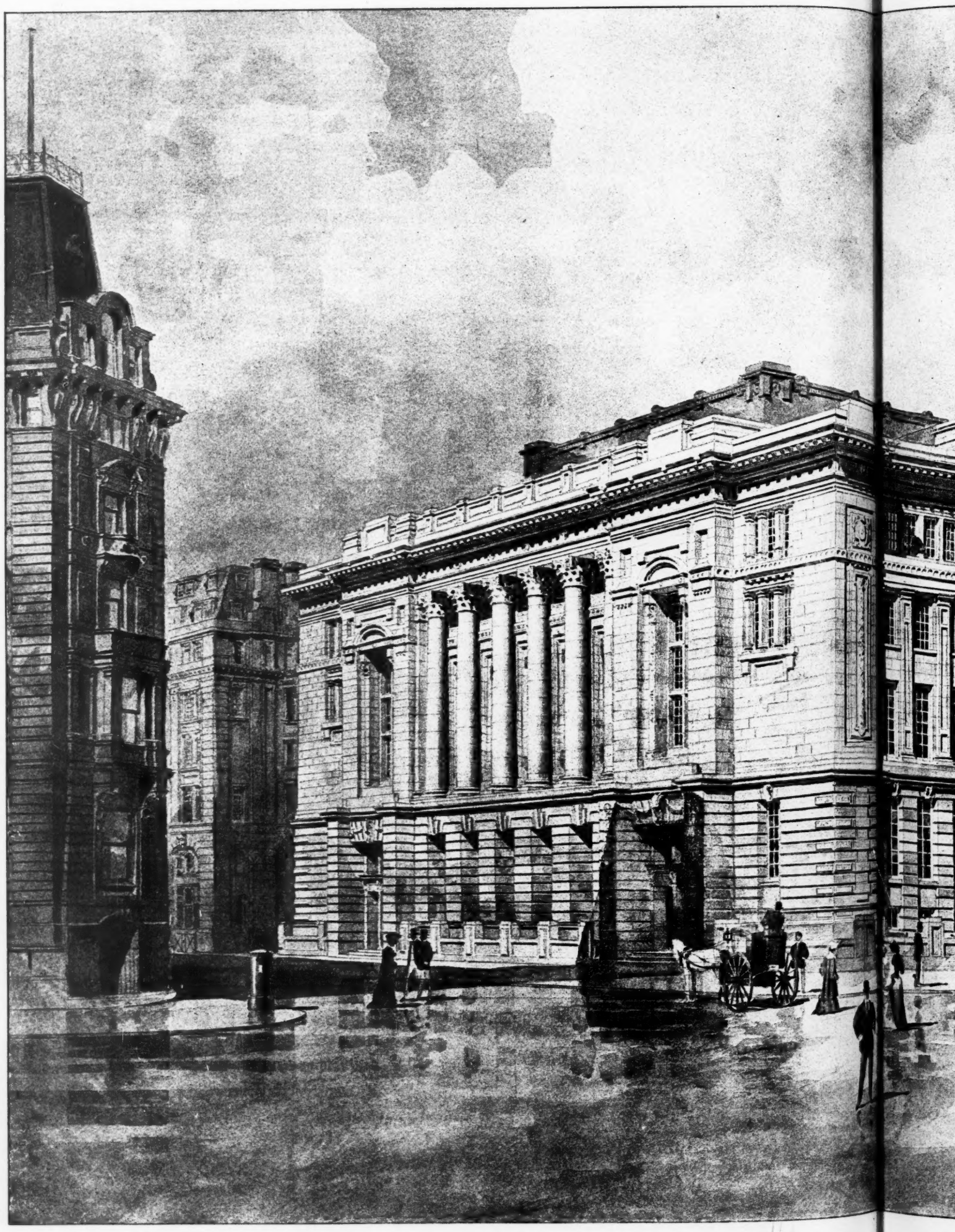
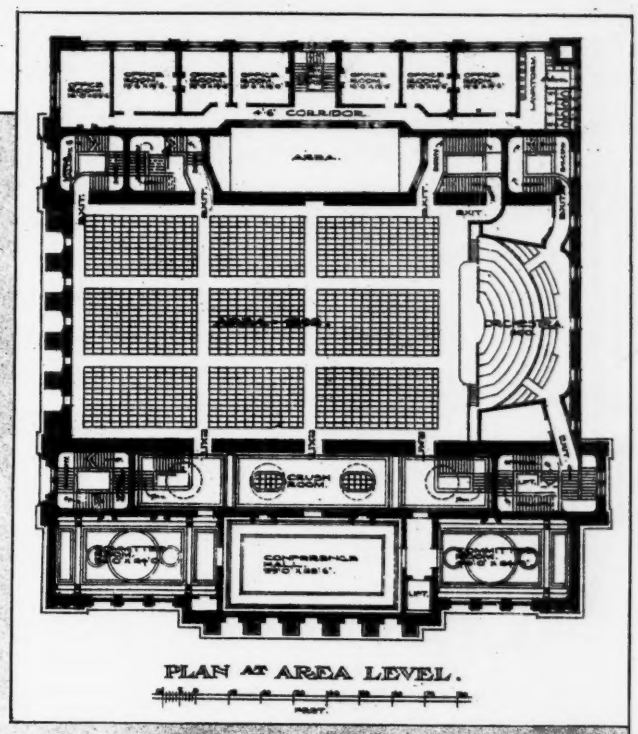
SCULPTURE AT THE ROYAL ACADEMY.

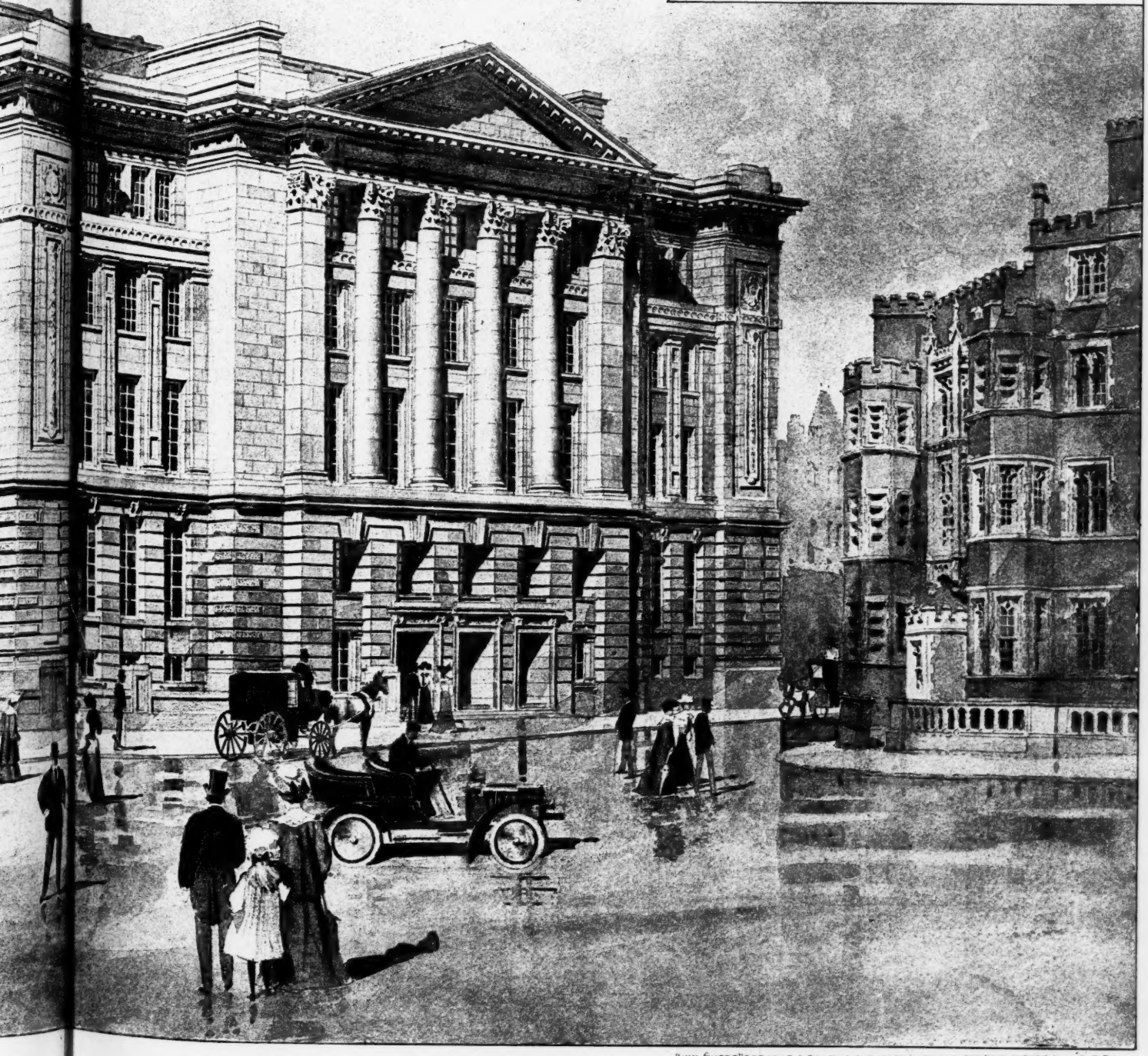
"FINE ARTS": ONE OF A SERIES OF PANELS FOR PEDESTAL OF QUEEN VICTORIA MEMORIAL, WELLINGTON, N.Z.

MR. ALFRED DRURY, A.R.A., SCULPTOR.



WESLEYAN HALL COMPETITION.—DESIGN BY MR. [illegible]





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TITION—SIGN BY MR. W. FLOCKHART, F.R.I.B.A.

COTTAGE HOMES, CROYDON.—Mr. J. Hatchard Smi

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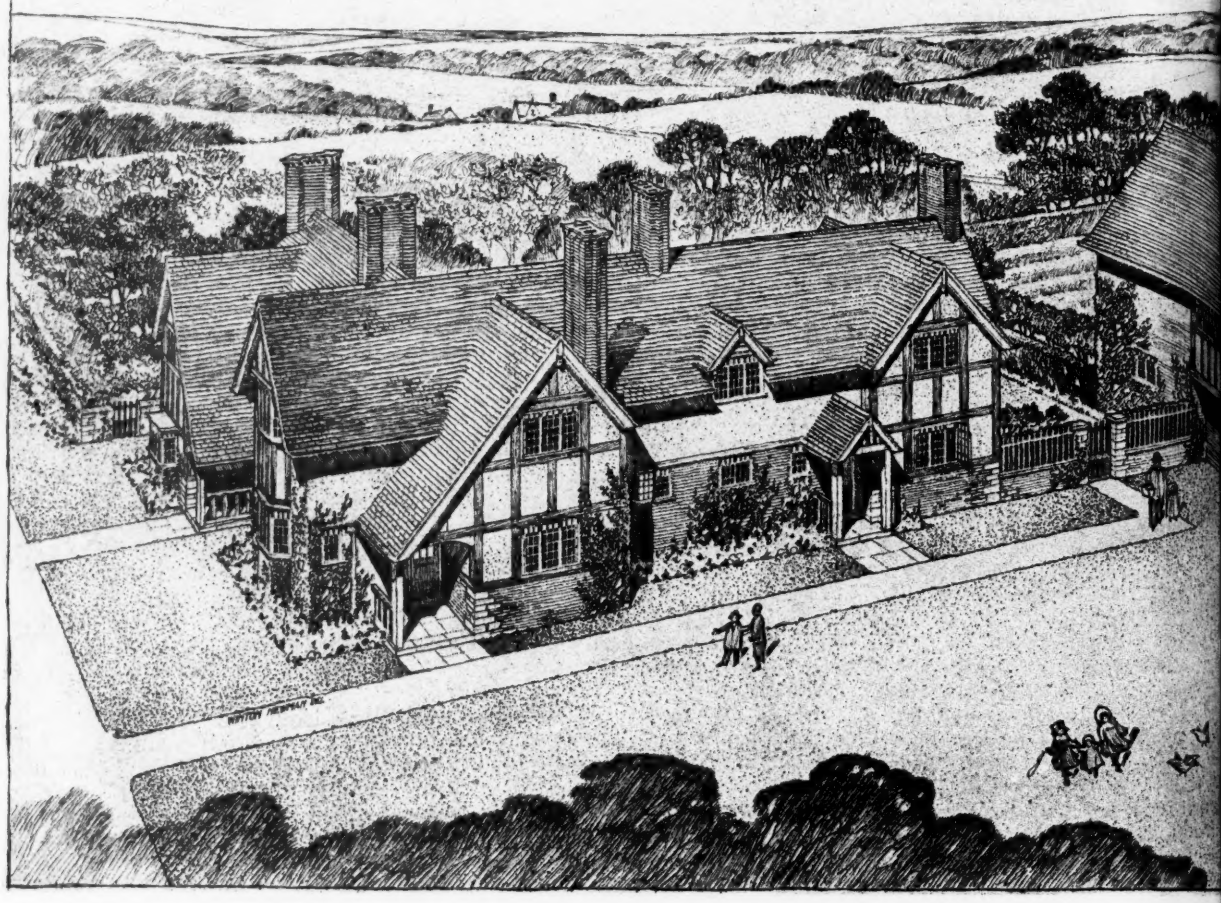
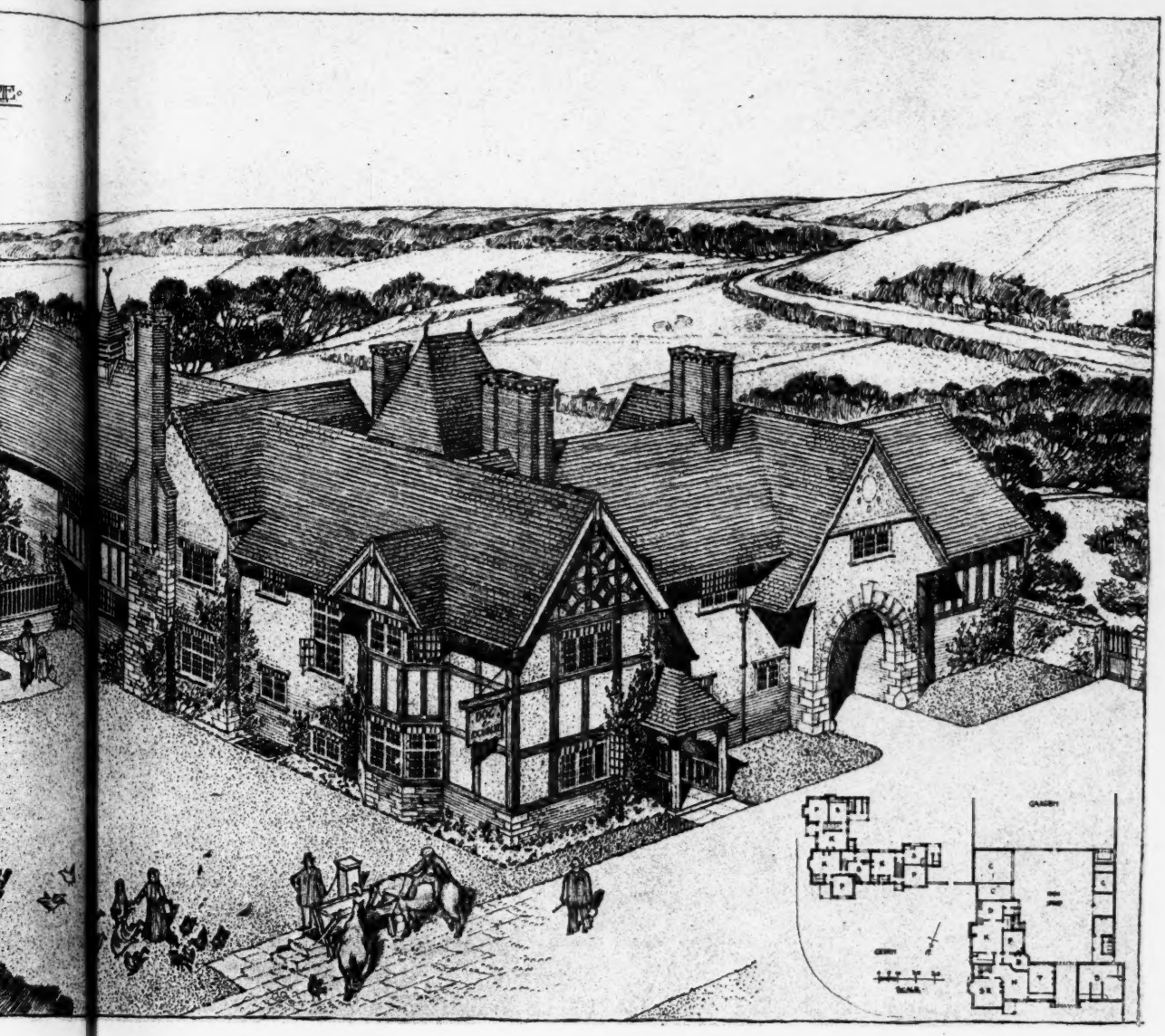
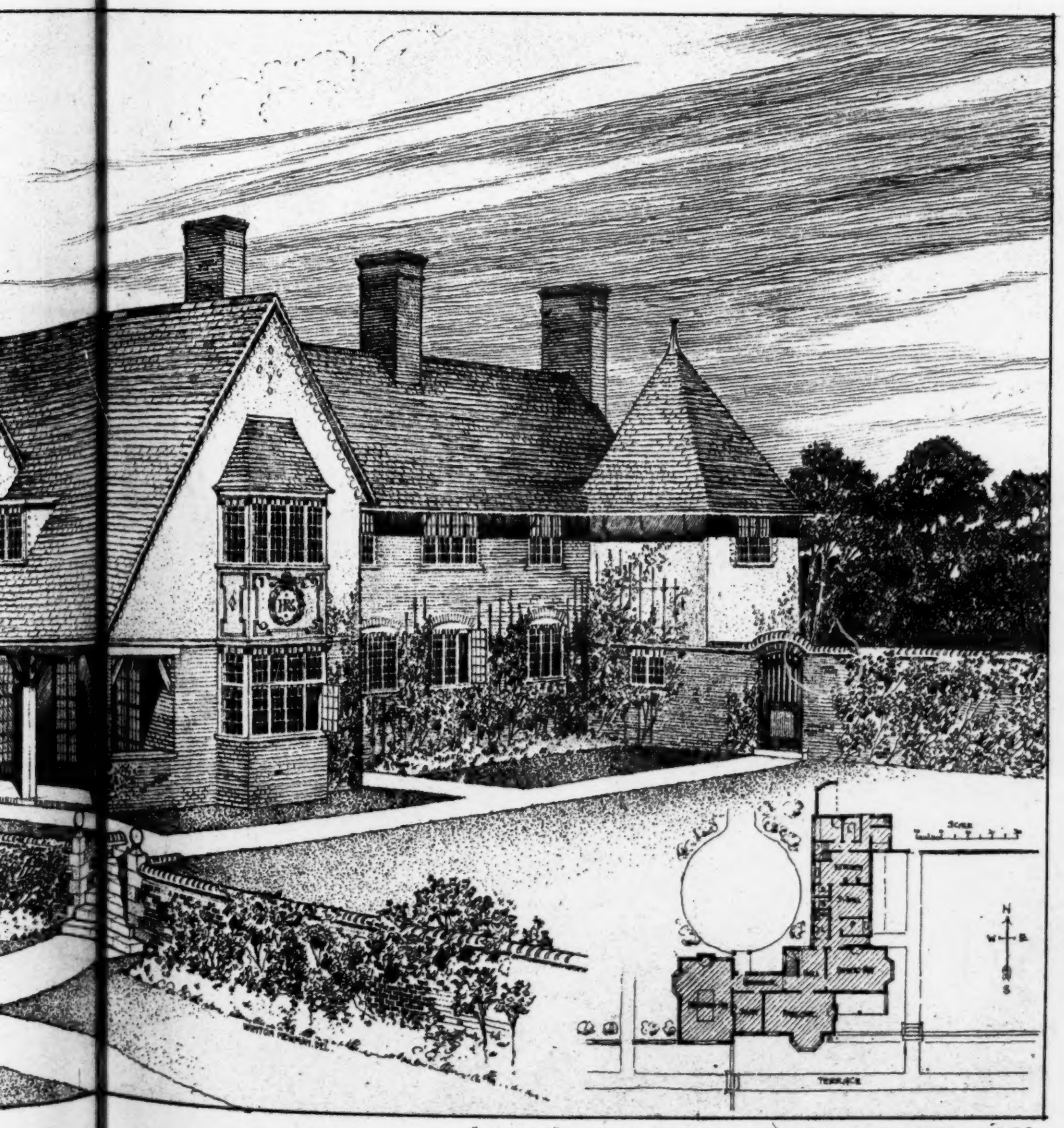
DON.—MR. HATCHARD SMITH, F.R.I.B.A., ARCHITECT.

"DOG AND DOUBLET" INN AND COTTAGES AROUND THE VILLAGE GREEN AT SANDON STAFFORDSHIRE
E. GUY DAWBER ARCHITECT



SOLOM'S WOOD SURREY
for H. K. RUTHERFORD ESQ.
E. GUY DAWBER ARCHITECT





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